S. HRG. 101-953

DEPARTMENT OF ENERGY'S URANIUM ENRICHMENT ENTERPRISE

HEARING

BEFORE THE

SUBCOMMITTEE ON
ENERGY RESEARCH AND DEVELOPMENT

OF THE

COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON THE

SMITH BARNEY, HARRIS UPHAM & CO. INDEPENDENT FINANCIAL ASSESSMENT OF THE DEPARTMENT OF ENERGY'S URANIUM ENRICHMENT ENTERPRISE

JUNE 28, 1990

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DEPARTMENT OF ENERGY'S URANIUM ENRICHMENT ENTERPRISE

THURSDAY, JUNE 28, 1990

U.S. SENATE,
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:35 a.m., in room SD-366, Dirksen Senate Office Building, Hon. Wendell H. Ford, presiding.

OPENING STATEMENT OF HON. WENDELL H. FORD, U.S. SENATOR FROM KENTUCKY

Senator FORD. Good morning, ladies and gentlemen. Today, the Subcommittee on Energy Research and Development is holding a hearing to receive testimony on the independent financial assessment of the Department of Energy's Uranium Enrichment Enterprise, carried out under the direction of Frank Zarb of Smith Barney, Harris Upham & Co.

This is a comprehensive analysis of the prospects for the enrichment enterprise. It is particularly welcome to me, because it confirms what I have been saying is needed. It confirms the position taken by this Committee under the leadership of Senator Johnston, Senator McClure and Senator Domenici.

This report states in no uncertain terms that we must act, and act now, to restructure this enterprise. The uranium enrichment market is now a worldwide, competitive market. If the U.S. enrichment enterprise does not change to meet this new reality, we will lose a multimillion dollar business to foreign competitors. If we do not act, and act now, we will be dependent on foreign sources of supply for basic fuel for our domestic electric supply and our nuclear submarine deterrent. I have been saying this for two Congresses. This Committee has been saying this for two Congresses. With this report, we have the ammunition to move. We simply must get on with the job.

This report is full of detailed analysis of the important aspects of the enrichment enterprise. Perhaps the most important issue that is analyzed and put to rest is the so-called debt. There is no debt. In fact, there has been an over-recovery of cost. Let me quote from a June 20 letter to me, written by DOE Assistant Secretary William H. Young, and I quote:

"The material provided by Smith Barney clarifies their view that the Department has recovered all cost associated with uranium en-

richment and that no debt exists for uranium enrichment. Smith Barney believes that there is no unrecovered cost, and in fact and over-recovery of $1.7 billion has been made to date to the U.S. Treasury. As a result, Smith Barney had recommended that a Government enrichment corporation be established with an initial debt of zero."

I think that provides quite a fitting point of departure for this hearing.

I would like to put Mr. Young's total letter in the record at this point.

[The letter referred to follows:]

DEPARTMENT OF ENERGY,
Washington, DC, June 20, 1990.

Hon. WENDELL H. FORD,
Chairman, Subcommittee on Energy Research and Development, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: Smith Barney, Harris Upham & Company, Incorporated, has provided the enclosed supplemental material addressing the issue of unrecovered costs for the Department's uranium enrichment enterprise. This material was provided to complement and further define the results of their independent financial assessment of the uranium enrichment enterprise that we forwarded to you on May 18, 1990.

The material provided by Smith Barney clarifies their view that the Department has recovered all costs associated with uranium enrichment and that no debt exists for uranium enrichment. Smith Barney believes that there is no unrecovered cost and, in fact, an over-recovery of $1.17 billion has been made to date to the U.S. Treasury. As a result, Smith Barney had recommended that a Government enrichment corporation be established with an initial debt of zero.

I believe that the enclosed material should be useful in terms of resolving the issue of unrecovered costs as it relates to the more important conclusion by Smith Barney that a Government corporation for uranium enrichment should be established. The Department has submitted legislation to Congress to establish a Government enrichment corporation, and this legislation remains one of the Administration's highest priorities. The Senate has already passed similar legislation, and the Department is working closely with cognizant committees in the House of Representatives in order to enact enrichment legislation during this session of Congress.

Sincerely,

WILLIAM H. YOUNG,
Assistant Secretary for Nuclear Energy.

[Enclosure]

SMITH BARNEY, HARRIS UPHAM & CO., INC.,
New York, NY, June 15, 1990.

Mr. PHILIP C. SEWELL,
Deputy Assistant Secretary for Uranium Enrichment, Office of Nuclear Energy, U.S. Department of Energy, Washington, DC.

Re: Supplemental Analysis of Unrecovered Costs—as Evaluated in Smith Barney's Independent Financial Assessment of the Department of Energy's Uranium Enrichment Enterprise, dated May 15, 1990.

DEAR MR. SEWELL: In our above referenced Report, Smith Barney and its Project Team undertook a detailed analysis of the components of unrecovered costs. This analysis categorized the treatment of major expenditures in dispute into three general areas:

—Oversights & Errors
—Judgments
—Policy Issues

Utilizing the independent expertise of Coopers & Lybrand, the full range of costs involved in the debate on unrecovered costs were reviewed. For the first two categories of Oversights & Errors and Judgments, Smith Barney and the Project Team developed its own estimate of unrecovered costs as found in our Report.

Additionally, Smith Barney requested Coopers & Lybrand to calculate the full amount of the United States Government investment in the Department of Energy's

Uranium Enrichment Enterprise, including the third category of Policy Issues, as of September 30, 1989. Their supplemental report is attached hereto.

In reliance upon the Coopers & Lybrand analysis. Smith Barney and the Project Team believe that there is no unrecovered cost and, in fact, there has been an over-recovery of $1.170 billion.

While there has been considerable debate over this issue and the appropriate accounting methodology to determine the amount of these costs, the Project Team has reviewed the supplemental report of Coopers & Lybrand and concurs with both its methodologies and findings. Furthermore, this supplemental report should be read and evaluated in the context of our referenced Report of May 15, 1990.

Sincerely,

WILLIAM H. TIMBERS, JR.

[Enclosure]

COOPERS & LYBRAND,
CERTIFIED PUBLIC ACCOUNTANTS,
New York, NY, June 8, 1990.

Mr. WILLIAM H. TIMBERS, JR.,
Managing Director, Smith Barney, Harris Upham & Co. Inc., 1345 Avenue of the Americas, New York, NY.

DEAR MR. TIMBERS: As you requested, we have calculated the amount of the United States Government investment in the Department of Energy's Uranium Enrichment Enterprise as at September 30, 1989, based on the following assumptions:

a. The balance of unrecovered costs at September 30, 1989 from both commercial and government customers, before policy issues relating to plant abandonment and excess capacity, is $4,525 million.

b. The total costs of plant abandonment and excess capacity at September 30, 1989, including imputed interest, were $11,389 million.

c. The costs of policy issues should be allocated on the basis of a 50/50 split between equity holders and customers.

Our findings are set forth in the accompanying report. The procedures were performed solely to assist Smith Barney in its independent financial assessment of the UEE for the Department of Energy.

We believe you understand that the scope of our procedures, as described above, was intended to provide information to assist you in your independent assessment and did not constitute an examination in accordance with professional standards; accordingly, we are unable to express and do not express an opinion on any of the data included in the accompanying report, which also sets forth our comments and findings. Had we performed additional procedures or had we conducted an examination of the data in accordance with professional standards, other matters might have come to our attention that would have been reported to you. Accordingly, we take no responsibility for the sufficiency of the procedures for your purposes.

This report is intended solely for the information and use of Smith Barney and for filing with the Department of Energy and should not be used for any other purposes.

Very truly yours,

COOPERS & LYBRAND.

UNRECOVERED COSTS—TREATMENT OF POLICY ISSUES RELATING TO EXCESS CAPACITY AND ABANDONED PLANT

As indicated in our report dated May 10, 1990, we are not aware of any clear, generally accepted methodology to allocate the responsibility for and costs of policy issues relating to excess capacity and abandoned plant. However, the Federal Energy Regulatory Commission ("FERC"), which is the only U.S. government entity that consistently has to deal with issues such as abandoned plant, has determined that equitable resolution of such issues is a 50/50 split (50 percent to equity holders, and 50 percent to customers) of all prudently incurred costs. This is the policy which applies to the UEE's domestic civilian customers for their own FERC-regulated operations.

	(Dollars In Millions)		
	Principal	Imputed Interest	Total
Excess capacity	$1,200	$1,649	$2,849
GCEP abandonment	2,934	2,321	5,255
TVA demand charges	2,618	667	3,285
Total	$6,752	$4,637	$11,389

The DOE has excluded $4,134 million from its calculation of unrecovered costs, being the principal amounts for excess capacity and for GCEP.

The interest on GCEP and excess capacity write-offs represents the imputed interest on those amounts, of which $2,265 millions is reflected in the UEE's cumulative deficit and $1,605 million is not. The TVA demand charges are for capacity costs paid for unused and unrequired firm power commitments.

In addition to the above costs, the UEE will incur an additional $951 million of TVA demand charges for the years 1990 to 1994.

If the policy of a 50/50 split were applied to the UEE, its share of the above costs at September 30, 1989 would be $5,695 million. This amount would be deducted from the recalculated unrecovered cost balance before policy issues of $4,525 million at September 30, 1989 (as shown in our report dated May 10, 1990) The restated balance of unrecovered cost at September 30, 1989 using the policy of a 50/50 split of costs is as follows:

	(Dollars In Millions)
As shown in Coopers & Lybrand's report of May 10, 1990	$4,525
Less: 50% of total policy costs	(5,695)
Net overrecovery at September 30, 1989	$(1,170)

This approach might be appropriate in this situation, and might resolve this issue in a manner that is equitable to the DOE and to its customers. The alternatives are to require full recovery, no recovery or determine some other basis for recovery which is more equitable.

A prudence evaluation has not been conducted and we would propose, in the absence of such an evaluation, to treat abandoned plant, total costs of excess capacity and TVA demand charges as prudently incurred.

Senator FORD. I have been corrected. That is $1.17 billion. That is just a small mistake in Government terms. That is not much.

[Laughter.]

Senator FORD. I am delighted to have my good friend, Senator Jim McClure with us, the ranking member. Senator McClure, do you have any opening statement you would like to make?

STATEMENT OF HON. JAMES A. McCLURE, U.S. SENATOR FROM IDAHO

Senator MCCLURE. Thank you, Mr. Chairman. First of all, I commend you for the statement that you have made and I appreciate the cooperation of the chairman of the full Committee in scheduling this hearing. I have a statement that I will put in the record at this point.

Senator FORD. That will be put in the record in total.

[The prepared statement of Senator McClure follows:]

PREPARED STATEMENT OF HON. JAMES A. MCCLURE, U.S. SENATOR FROM IDAHO

URANIUM ENRICHMENT

Good morning. We are here once again in support of attempts to get the Department of Energy's uranium enrichment enterprise restructured so that it can respond to today's market challenges.

The emergence of a significant spot market for enriched uranium is changing the character of the marketing practices engaged in by the enterprise and its commercial customers. Large available excess inventories are having a downward effect on spot-market prices. In addition, there is apparent dumping by the Soviets.

The enterprise is currently hamstrung by out-dated pricing policies and Congressional budget and appropriations concerns that do not reflect today's market realities. It is unable to make decisions which are responsive to market forces. It's therefore unable to compete with its more progressive, business-oriented counterparts around the world and is already being notified by customers of their intent to terminate long-term contracts. Unless DOE's uranium enrichment enterprise is restructured these customers will be lost to foreign competitors.

This is the third Congress in which the Senate has enacted legislation to create an entity that will have the flexibility to respond to these challenges. We are here today to receive testimony on an independent financial assessment by Smith Barney which reaffirms the conclusion the Senate reached long ago: the uranium enrichment enterprise can survive only if its present structure is changed to permit it to function as a commercial enterprise free of government policy decisions and political restrictions on its operations.

The financial study addresses several other issues which have spawned debate on proceeding with the restructuring. One of these—the amount of past costs the Federal government is entitled to collect—is fully analyzed and, hopefully, can now be laid to rest. If this enterprise is to remain economically viable, it must be permitted to go forward without the burden of a debt defined by past political and policy considerations.

We must assure that legislation is enacted that will allow this enterprise the freedom to develop both short-term and long-range marketing strategies. If we do not act expeditiously, it is certain that the current downward spiral of the enterprise will culminate in the demise of the enterprise's commercial business. If this were to occur the government would be left with enormous costs to shutdown some of its facilities and the astronomical costs for enriched uranium for its defense programs. In addition, our domestic energy industry would be dependent on foreign supplies of enriched uranium, further eroding our energy security.

I am pleased that Senator Ford has scheduled this hearing and look forward to hearing from the witnesses.

Senator MCCLURE. Certainly, my own views will come out as we go through this questioning, and perhaps I can best expedite the hearing by withholding comments at this point and getting to the testimony of the witnesses.

Senator FORD. Thank you very much, Senator McClure.

We are very pleased to have Deputy Secretary Henson Moore with us. Before we do that, I would like to have a statement placed in the record by Senator Johnston, the Chairman of the Committee.

[The prepared statement of Senator Johnston follows:]

PREPARED STATEMENT OF HON. J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

I congratulate Senator Ford for holding today's hearing on the Smith Barney independent financial assessment of the Department of Energy's uranium enrichment enterprise.

This report deals definitively with the most emotional issue in the uranium enrichment debate. That is the issue of the so-called enrichment debt. Smith Barney finds that there is no debt. In fact, there has been an over recovery. As DOE has said,

"Smith Barney believes that there is no unrecovered cost and, in fact, an over-recovery of $1.17 billion has been made to date to the U.S. Treasury. As a result,

Smith Barney had recommended that a Government enrichment corporation be established with an initial debt of zero."

This finding should free our colleagues in the House to do the right thing. That right thing is to enact legislation to restructure the uranium enrichment enterprise into a competitive business enterprise.

The world enrichment market is changing. It is a very, very competitive market, characterized by surplus capacity, aggressive, low-cost competitors, large excess inventories, and brokers offering price-cutting spot sales.

Today DOE's only hold on its share of this market is the existence of long-term contracts with customers. These are tough high-price contracts. These contracts begin to expire in 1995. By 2000 they will be gone. Unless DOE can come up with prices that are realistic, their entire market share will evaporate by the year 2000.

This will mean billions of dollars of lost sales. It will mean a withdrawal of the United States from a high-tech field with strong national security implications. It will mean dependence on foreign owned or foreign based suppliers for yet another component of our energy supply mix.

It will be a self-inflicted wound.

The Smith Barney report lays this case before Congress in unmistakable terms. It provides the impetus to move the last doubters. We are ready to act. We need to act now.

Senator FORD. Secretary Moore, we are delighted to have you with us this morning, and we look forward to your statement and your ability to answer the questions later on.

STATEMENT OF HON. W. HENSON MOORE, DEPUTY SECRETARY, DEPARTMENT OF ENERGY

Mr. MOORE. Thank you, Mr. Chairman. I think it is very appropriate that, after the Smith Barney report is now in, a public hearing be held on the import of that report. This is the first public hearing since the report has been done and we are very appreciative of this opportunity to discuss that report in a public hearing. A copy of the complete report has been provided to the members of the Committee. With your permission, I would like to submit the executive summary, which has had the proprietary and business sensitive data removed, for the record.[1]

We were fortunate that a company of Smith Barney's caliber was able to provide an independent—and I want to stress the term "independent"—assessment of the Department's Uranium Enrichment Enterprise, and the optimal structure of the enterprise for the future. Frank Zarb, Smith Barney's Chairman, has enormous experience with Government entities that have adopted various characteristics of private industry, most notably Conrail. Based on our knowledge of Mr. Zarb and of Smith Barney and all the people working with him, such as Mr. Nick Timbers here this morning, we knew that we would receive a first-rate evaluation of the utmost integrity and objectivity. We were not disappointed.

Smith Barney's report contains a number of important findings and recommendations. I would like to briefly discuss three, which we consider to be the most important.

First, maximizing value to the Treasury. Smith Barney's most noteworthy conclusion is that the best way to maximize the value of DOE's uranium enrichment operations to the U.S. Treasury is to establish a true business enterprise in the private sector. However, the report finds that immediate transfer to the private sector is not

[1] The complete report has been retained in subcommittee files. The executive summary appears on page 12.

feasible today because of the current organizational structure, unknown contingent liabilities, the absence of clear, regulatory requirements for existing and new technology, lack of a commercial track record, and uncertainties associated with the evolving short-term market. As a result, Smith Barney recommends, as a first step, transferring the enterprise to a newly-created Government corporation. Mr. Chairman, as you well know, this is totally in keeping with the Administration's position and the legislation which the Senate passed last year.

This first finding of Smith Barney is the critical finding. It is the most important one, it indicates what we should do from here and how do we do it. They have come up with a report that indicates that we are on the right track, and I think that is the most key thing that is in the Smith Barney report.

A second item: unrecovered cost. In their May 15 report, Smith Barney estimated the Uranium Enrichment Enterprise unrecovered cost—and let me say that we view that as the investment of the taxpayers. They viewed unrecovered cost as being $4.5 billion as of September 30, 1989, without factoring in Government policy costs, which we call write-offs at DOE (such as excess capacity, Tennessee Valley Authority demand payments for power not taken, and associated imputed interest charges). DOE came up with a figure of $3 billion, which included write-offs of some of these policy costs, and Table 1 to the testimony compares the total rack-up between the Department of Energy and Smith Barney.

Smith Barney initially declined to take a position on how the Government policy costs should be handled. In response to requests by Members of Congress and the Department, Smith Barney provided an additional analysis on June 15 that factored in these policy costs. Based on available precedents, Smith Barney concluded that it would be appropriate to write off nearly $5.7 billion, or 50 percent of Government policy costs.

Their total writeoff was larger than ours. We had come up with a figure of $4.1 billion. Therefore, they stated that they believe there is no unrecovered cost owed to the United States Treasury for investment of principal and interest, and in fact there had been an overpayment, or an over-recovery, of $1.17 billion.

DOE took a different approach in arriving at our figure of $3 billion of unrecovered costs. By our calculation, the Treasury would get full return on its investment if it ultimately received this figure of $3 billion from the eventual sale of the enterprise and/or from dividend payments paid by the Government corporation back to the Treasury. Instead, Smith Barney concludes that there is no unrecovered cost—indeed, an overpayment.

On a separate issue, but an important one, Smith Barney recommended as a practical approach to corporate competitiveness that a Government corporation be assigned an initial debt of zero. The Administration's proposed legislation and that which passed the Senate had an initial debt in it of $364 million derived simply from the net appropriations as of September 30, 1986. From the total money given to it by the Congress versus the money paid back from receipts received, there was a deficit of $364 million as of September 30, 1986.

The Uranium Enrichment Enterprise has made profits since that date in 1986, and now there is no longer an initial debt—as a matter of fact it is now a positive figure. Therefore, we agree strongly with Smith Barney that the initial debt of the corporation is in fact zero and it is not $364 million as the legislation presently provides.

Moving to another topic covered by Smith Barney—the Atomic Vapor Laser Isotope Separation technology that we refer to as AVLIS, Smith Barney concluded that the AVLIS technology is sound, its deployment as a commercial enrichment process is technically possible, and that the successful deployment of AVLIS could give the Uranium Enrichment Enterprise a competitive advantage in the post-2000 time frame. A special AVLIS review panel, organized by Smith Barney, concluded that the AVLIS deployment schedule projected by DOE could be delayed by up to five years, that capital costs could increase by 100 percent, and that the production costs as a result of all of this could increase to $44 per separative work unit (SWU). We want to point out that even at $44, that is well below today's production cost of the enterprise of $75 per SWU. They also found that the completion of an AVLIS technology demonstration by the end of 1992 is optimistic but achievable.

DOE takes exception to the report's conclusions regarding the schedule and costs for deployment of AVLIS technology. The major objection the Smith Barney panel had with DOE's schedule was that licensing problems would cause a significant delay. We have allowed two years for such licensing and have based this on consultation with experts in the field, recognizing that the hazards associated with enrichment facilities are significantly less than those for nuclear power plants. Thus, the Smith Barney conclusion that deployment could be delayed by five years we think is overly pessimistic, and we believe that AVLIS has the potential for enhancing our competitive position beginning in the late 1990s rather than the post-2000 time frame as Smith Barney concludes.

With respect to costs, we recognize that in the development of a new technology the costs of utilizing that technology are sometimes underestimated, but we believe that there is no basis for doubling the cost estimates as the Smith Barney panel did. The last evaluation of capital cost for an AVLIS production plant was performed in 1989 for DOE and confirmed our production cost estimates of $25 to $50 per SWU for a uranium metal-based fuel economy associated with the AVLIS-based technology. We believe that Smith Barney's assumptions and judgments in this area were unnecessarily pessimistic, as compared to those in the evaluation, and therefore, our estimates, we think, are both realistic and achievable.

Now, where do we go from here? Most of the report's recommendations are consistent with current or planned activities designed to improve the performance and enhance the competitive position of this $1 billion-plus-a-year business. We have begun to implement such measures as we can, particularly in regard to a more rational management structure and cost-cutting measures. However, the additional steps that we can pursue under existing organizational constraints are limited, and would not address the fundamental need for commercial flexibility.

DOE has steadily improved its operation since 1984, yet substantial problems remain ahead. While we pursue efficiency and competitiveness along a relatively limited number of paths, our foreign competitors can employ a much wider range of options. Without passage of restructuring legislation, we do not believe that we can achieve the maximum effect from internal changes and the ability of the enrichment enterprise to compete effectively will continue to erode.

We are facing severe market pressures today that need to be addressed promptly. DOE's enrichment business used to have 100 percent of the free world enrichment market. It now has less than 50 percent of that market under signed, firm contracts. We think that will continue to erode throughout the 1990s. If the enterprise remains a Government agency, it will be unable to compete as effectively to retain those customers.

We used to be the only free market enricher of uranium. Where a business would have fought to retain that position, we made mistakes in the past and the Government closed its order books, quickly causing the emergence of two European competitors—Eurodif and Urenco. Now the Soviets have entered the market with heavily discounted enrichment prices. In addition, there are now prospects of a private-owned enterprise in Louisiana—the Louisiana Energy Services Plant—and the Japanese are talking about building an enrichment capacity by the end of this decade. Therefore, we face even more competition in the future.

The competitive pressure on this business is increasing relentlessly. We need to move fast to create a Government corporation, or we can expect this business to lose further ground.

This Subcommittee, and you personally, Mr. Chairman, deserve much credit for spear-heading Senate passage of this critically-needed legislation. Unfortunately, the House has not yet followed suit.

Smith Barney has confirmed that creation of an enrichment corporation is the best way to maximize the enrichment operation. This study also found that a restructured Government corporation would be able to provide reliable, competitively-priced enrichment, establish a track record of successful operating and financial performance, make capital funding decisions based on economic rather than political factors, and conduct business in a less politicized environment so that it can be managed in a more efficient, business-like fashion. I can assure you that both Secretary Watkins and I are committed to working with Congress to achieve passage during this calendar year. We all need to use every means possible to pass this legislation this year.

I would be happy to answer any questions that you and Senator McClure have.

[The prepared statement of Mr. Moore and the executive summary of the May 1990 report follow:]

PREPARED STATEMENT OF HON. W. HENSON MOORE, DEPUTY SECRETARY, DEPARTMENT OF ENERGY

Mr. Chairman, I am pleased to be here this morning to discuss recent developments in the Department of Energy's (DOE) uranium enrichment program, specifically the recently completed report prepared by Smith Barney, Harris Upham and

Company, Incorporated. A copy of the complete report has been provided to members of the Committee, and with your permission, I would like to submit the Executive Summary along with an abridged version, which has had the proprietary and business sensitive data removed, for the record.

The issue of restructuring the Department's uranium enrichment enterprise became entangled with so many additional issues that we believed the overwhelming benefits of creating a Government corporation were becoming lost in the claims and counterclaims of various parties with conflicting agendas. To move our legislation off dead center required some consensus around what action was most financially sound from the perspectives of the taxpayers, the interest of the U.S. Government, the needs of the enrichment enterprise in a competitive market, and the energy and national security of the country. Although we thought the Administration's proposed legislation was both appropriate and necessary, we also wanted an independent, objective evaluation by a reputable Wall Street investment firm in order to provide the best judgment possible on this important matter.

We were fortunate that a company of Smith Barney's caliber was able to provide an independent (and I would like to stress the word independent) assessment of the Department's uranium enrichment enterprise and the optimal structure of the enterprise for the future. Frank Zarb, Smith Barney's Chairman, has enormous experience with Government entities that have adopted various characteristics of private industry, most notably Conrail. Based on our knowledge of Mr. Zarb and of Smith Barney, we knew that we would receive a thorough, first-rate evaluation of the utmost integrity and objectivity. We were not disappointed.

Smith Barney's report contains a number of important findings and recommendations. I would like to briefly discuss three that I consider to be most important.

KEY FINDINGS AND RECOMMENDATIONS

Maximizing Value to the Treasury

Smith Barney's most noteworthy conclusion is that the best way to maximize the value of DOE's uranium enrichment operations to the U.S. Treasury is to establish a true business enterprise in the private sector. However, the report finds that immediate transfer to the private sector is not feasible today because of the current organizational structure, unknown contingent liabilities, the absence of clear regulatory requirements for existing and new technology, lack of a commercial track record, and uncertainties associated with the evolving short-term market. As a result, Smith Barney recommends, as a first step, transferring the enterprise to a newly-created Government corporation.

DOE supports this conclusion. It is fully consistent with the Administration's proposed legislation to restructure the uranium enrichment enterprise.

Unrecovered Costs

In their May 15 report, Smith Barney estimated the uranium enrichment enterprise's unrecovered cost as of September 30, 1989, at $4.5 billion, without factoring in Government policy costs (referred to as "writeoffs" by DOE) such as excess capacity, Tennessee Valley Authority demand payments for power not taken, and associated imputed interest charges. DOE's figure of $3 billion includes write-offs of some of these policy costs. Table 1 highlights the treatment of unrecovered costs. Smith Barney initially declined to take a position on how these Government policy costs should be handled. In response to requests by members of Congress and the Department, Smith Barney provided additional analysis on June 15, that factored in these policy costs. Based on available precedents, Smith Barney concluded that it would be appropriate to write off nearly $5.7 billion, or 50 percent of Government policy costs. (DOE computed these as $4.1 billion.) Therefore, they stated that they "believe there is no unrecovered cost, and, in fact, there has been an over-recovery of $1.17 billion."

DOE has taken a different approach in arriving at our figure of $3 billion of unrecovered cost. By our calculation, the Treasury would get full return on its investment if it ultimately received $3 billion from the eventual sale of this enterprise and/or from dividend payments. Smith Barney concludes the Treasury has already received in excess of its investment by $1.17 billion.

On a separate issue, Smith Barney recommended, as a practical approach to corporate competitiveness, that a Government corporation be assigned an initial debt of zero. The Administration's proposed legislation set an initial debt of $364 million derived from net appropriations as of September 30, 1986. As the enrichment enterprise has made profits since the time it was first calculated (1986), there is no longer

an initial debt; as a matter of fact, it is a positive figure of $300 million. Therefore, we agree with Smith Barney that the initial debt of the corporation should be zero.

Atomic Vapor Laser Isotope Separation (AVLIS) Technology

Smith Barney concluded that the AVLIS technology is sound, its deployment as a commercial enrichment process is technically possible, and that the successful deployment of AVLIS could give the enrichment enterprise a competitive advantage in the post-2000 timeframe. A special AVLIS review panel, organized by Smith Barney, concluded that the AVLIS deployment schedule projected by DOE could be delayed by up to 5 years, capital costs could increase 100 percent and production costs could increase to $44 per separative work unit (SWU), which is still well below today's production cost of $75 per SWU. They also found that the completion of an AVLIS technology demonstration by the end of 1992 is optimistic but achievable.

DOE takes exception to the report's conclusions regarding the schedule and costs for deployment of AVLIS technology. The major objection the Smith Barney panel had with DOE's schedule was that licensing problems would cause a significant delay. We have allowed 2 years for such licensing and have based this on consultation with experts in the field, recognizing that the hazards associated with enrichment facilities are significantly less than those for nuclear power plants. Thus, the Smith Barney conclusion that deployment could be delayed by 5 years is overly pessimistic and we believe that AVLIS has the potential for enhancing our competitive position beginning in the late 1990s, rather than the post-2000 timeframe as Smith Barney concludes.

With respect to costs, we recognize that in the development of a new technology the costs of utilizing that technology are sometimes underestimated, but we believe that there is no basis for doubling the cost estimates as the Smith Barney panel did. The last evaluation of capital cost for an AVLIS production plant was performed in 1989 for DOE and confirmed our production cost estimates of $25 to $50 per SWU for a uranium metal-based fuel economy associated with the AVLIS technology. We believe that Smith Barney's assumptions and judgments in this area were unnecessarily pessimistic as compared to those in the evaluation and, therefore, that our estimates are both realistic and achievable.

NEXT STEPS

Most of the report's recommendations are consistent with current or planned activities, designed to improve the performance and enhance the competitive position of this billion-plus-dollar-a-year business. We have begun to implement such measures as we can, particularly in regard to a more rational management structure and cost cutting measures.

However, the additional steps that we can pursue under existing organizational constraints are limited and would not address the fundamental need for commercial flexibility. DOE has steadily improved its operations since 1984, yet substantial problems remain ahead. While we pursue efficiency and competitiveness along a relatively limited number of paths, our foreign competitors can employ a much wider range of options. Without passage of restructuring legislation, we cannot achieve the maximum effect from internal changes and the ability of the enrichment enterprise to compete effectively continues to erode.

We are facing severe market pressures today that need to be addressed promptly. DOE's enrichment business used to have 100 percent of the free world enrichment market. It now has less than 50 percent of the market and this share is projected to decline significantly through the 1990s. If the enterprise remains a Government agency, it will be unable to compete effectively to retain commercial customers. We used to be the only free market enricher of uranium. Where a business would have fought to retain that position, the Government closed its order books, quickly causing the emergence of two European competitors, Eurodif and Urenco. Now the Soviets have entered the market with heavily discounted enrichment prices. In addition, the prospects of a Louisiana Energy Services plant in the United States and Japanese enrichment capacity by the end of the decade pose further competition.

The competitive pressure on this business is increasing relentlessly. We need to move fast to create a Government corporation or we can expect this business to lose further ground.

What will this mean? Over the last 4 years, uranium enrichment revenues have exceeded appropriations by more than $400 million. But as its competitiveness decreases, its ability to return funds to the Treasury will also decrease. In the worst case, if it lost all of its customers except the U.S. Government, the U.S. taxpayer would then have to shoulder the cost of the enterprise alone. Taxpayers would then have to support the entire cost of operation and infrastructure, pay a higher price

for defense enrichment services, and pick up the entire tab for environmental restoration and for decontamination and decommissioning of retired facilities, while U.S. consumers would still have to purchase enriched uranium for a substantial portion of the country's electric power needs from foreign sources. If this enrichment business fails to retain its commercial customers and serves only Government needs for enriched uranium, $300 million in higher costs would have to be appropriated each year. The net result is that this business will be converted from an entity that could return billions to one that drains funds from the Treasury.

This Subcommittee, and you personally, Mr. Chairman, deserve much credit for spearheading Senate passage of critically needed legislation. Unfortunately, the House has not yet followed suit.

Smith Barney has confirmed that creation of an enrichment corporation is the best way to maximize the value of the enrichment operation. This study also found that a restructured Government corporation would be able to provide reliable, competitively-priced enrichment, establish a track record of successful operating and financial performance, make capital funding decisions based on economic rather than political factors, and conduct business in a less politicized environment so that it can be managed in an efficient, businesslike fashion.

I can assure you that both Secretary Watkins and I are committed to working with Congress to achieve passage during this calendar year. We all need to use all means possible to pass this legislation this year.

I would be glad to answer any questions you might have.

Table 1.—UNRECOVERED COSTS

[Costs in billions of dollars]

	DOE	Smith Barney
Initial 1969 Value	$1.5	$1.5
Increases:		
Interest	5.9	[1] 7.5
Subtotal	7.4	9.0
Decreases:		
Surplus Cash Flow	−0.3	−0.3
Cost Adjustments	0.0	[2] −4.2
Write-Offs of Policy Costs	[3] −4.1	[3] −5.7
Total Decreases	−4.4	−10.2
Sept 30, 1989 Value	$3.0	($1.2)

[1] Smith Barney added interest costs relating to DOE's write-off of $4.1 B.

[2] Smith Barney reduced DOE's production cost that should have been applied to Defense customers ($1.10), carrying costs for uranium inventories ($1.50), costs of uranium applied to overfeed the enrichment plants ($0.60), interest based on fixed versus variable rates ($0.90), and other miscellaneous items ($0.10).

[3] DOE wrote off Policy Costs for GCEP ($2.90) and excess GDP capacity ($1.2B).

Smith Barney wrote off $5.70 or 50% of the following Policy Costs:

(1) GCEP—$2.90
(2) Excess GDP capacity—$1.20
(3) TVA payments—$2.60
(4) Associated interest on the above 3 items—$4.7B
Total—$11.4B

[Attachment]

UNITED STATES URANIUM ENRICHMENT ENTERPRISE, AN INDEPENDENT FINANCIAL ASSESSMENT PREPARED FOR THE DEPARTMENT OF ENERGY, MAY 1990

EXECUTIVE SUMMARY

Introduction

The business environment and operations of the United States Uranium Enrichment Enterprise ("UEE") have been subjected to significant challenges and changes over the past decade. In recent years, various restructuring alternatives have been

proposed to meet these challenges and, currently, several legislative proposals are being considered by Congress.

In order to assist in these deliberations, the Department of Energy ("DOE") has engaged Smith Barney, Harris Upham & Co. Incorporated, together with its Project Team, to conduct an independent financial assessment of the UEE and the pending legislation.

Challenges for the UEE

The UEE is currently structured as a business enterprise within a Cabinet department of the United States Government, yet it operates in a highly competitive and mature global industry. The UEE was originally created in the 1950's to serve the military requirements of the Government. Today, however, commercial utilities are its principal customers. In less than twenty years, the UEE has gone from a position of near global monopoly in supplying enriched uranium to the non-communist world to a current market share of approximately 45 percent.

Intense competition in the marketplace will continue. This is due to significant existing inventories and excess enrichment capacity, with very little increase expected in world demand through the end of the century and beyond. Utilities that purchase the UEE's enriched uranium have begun to notify the DOE that they intend to terminate their long-term contracts, and the trend toward terminations is expected to grow.

A significant low-cost spot market for enriched uranium has begun to develop, which utilities believe to be both broad and reliable. This movement toward a short-term market has been accelerated by the sale of low-cost inventories by foreign suppliers—further exacerbating the supply-demand imbalance in the world marketplace. The depth of existing spot supply and unused production capacity have caused a growing number of utility customers of the UEE to conclude that there is little risk of a supply failure. Therefore, they view spot market purchases at reduced prices as not only reliable but also cost-effective and prudent. As this market develops further, it will put additional pressure on both the UEE's market share and revenues.

Furthermore, the UEE is responsible for very significant current and future environmental clean-up costs that are associated with continuing operations, as well as the costs associated with the ultimate decommissioning and decontamination requirements for the UEE's enrichment facilities.

It is these challenges, among others, that set the stage for a thorough and timely review of the optimal business structure of the UEE for future competitiveness.

Principles of the Assessment

The Project Team's assessment of alternative proposals for restructuring the UEE and our formulation of a recommended strategy are based on meeting several goals. These include:

—applying the lesson of the UEE's history, i.e., that the future direction of the UEE should be predicated primarily on economic considerations. In order to assure this principle, the UEE should be insulated from the political and policy agendas that have historically affected its decision-making;

—identifying a structure that would maximize the value of enrichment operations to the Treasury. A value-maximizing strategy would seek to deploy enrichment assets so as to yield the highest return to the Treasury. The income produced thereby would be used to offset some of the Government's obligations from prior UEE operations;

—assuring a reliable and economic domestic source of enrichment services for both commercial and military applications. A growing percentage of U.S. utility customers are purchasing enrichment services from foreign suppliers, including the Soviet Union. However, national security considerations dictate that enriched uranium requirements for weapons needs, as well as some portion of the commercial nuclear power market should be served by domestic suppliers. This goal becomes especially significant in the context of a national energy policy that seeks to maintain access to the nuclear option as a future source of energy supply; and

—providing a comprehensive and workable approach for addressing the environmental, health and safety issues associated with the continued operation and ultimate decommissioning and decontamination of enrichment facilities. A fundamental objective of any restructuring effort must be the development of both a strong management capability and appropriate funding arrangements to assure that these issues are addressed adequately and on a timely basis.

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An Evaluation of the UEE

In an increasingly competitive world market, where product price has become the dominant criterion for nuclear utilities purchasing enriched uranium, the UEE has maintained operating profitability. However, this current and near-term profitability is based on long-term contract prices that cannot be sustained when lower priced, short-term purchases begin to dominate the market. As the UEE enters a period where successful competition will demand operating efficiencies, responsiveness to customer needs and pricing flexibility, it is constrained by:

—existing contracting and pricing inflexibility;

—the Government's short-term budget and planning process;

—conflicting Congressional mandates and Administration objectives;

—a lengthy and complex decision-making process; and

—the lack of a single, coordinated management structure that can establish and efficiently implement both short-term and strategic goals.

The UEE has substantial pre-existing liabilities relating to environmental clean up and ongoing compliance, decommissioning and decontamination and the Tennessee Valley Authority contract settlement costs. These obligations arise from prior enrichment operations and are "sunk costs" that will exist whether the UEE is shut down, restructured within the DOE, or transferred to a new profit-oriented entity outside of the Government. Estimates for these various costs range in the billions of dollars and, in many cases, are not currently subject to quantification.

Efforts to directly recover all or a significant portion of these "sunk costs" from the UEE's revenues, together with the proposed payback of "unrecovered government costs" are misdirected and ill-conceived in the context of historical objectives and future business requirements. A requirement to recover these costs would merely serve to create a debt burden and contingent liabilities that will make ongoing enrichment operations infeasible, whether under their current structure or restructured either within or outside the Government. In a highly price-competitive marketplace, a restructured UEE cannot assume these costs if it is to attain the goals we have identified above. These pre-existing "sunk costs" should remain with the Government. However, a restructured UEE that can recognize operating efficiencies and contract pricing flexibility so as to maximize profitability will provide the greatest source of funds for meeting these obligations and thereby maximize value to the Treasury.

Conclusions and Recommendations

The Project Team believes that the best way to maximize the value of enrichment operations to the Treasury, and to achieve the other goals of the Assessment, is to establish a true business enterprise in the private sector. Fundamentally, a private entity would be the most viable form of business that could compete effectively in the global market. However, we believe that such an immediate transfer would be impractical due to, among other reasons, the UEE's current organizational structure, unknown contingent liabilities, the absence of clear regulatory requirements for existing and new technology, lack of a commercial track record and uncertainties associated with the evolving short-term/spot market for enriched uranium purchases. Furthermore, because of these factors, the sale of the UEE to the private sector at this time would result in significantly less than optimal value to the Treasury in terms of both the price received from the privatization sale and annual cash flow available for distribution to the United States Government.

As a result, the Project Team recommends, as a first step, the transfer of the UEE to a newly-created government corporation. The Project Team believes it is critical to establish this proposed government corporation in a manner that will permit it to operate in a business-like fashion. This necessitates that the government corporation, to the maximum extent possible, operate outside of the political and bureaucratic environment that has historically affected the business operations of the UEE. This can best be accomplished by forming the new government corporation with an organizational structure and other corporate attributes as close as possible to those of a private corporation. In addition, it is imperative that the corporation be free of those administrative and financial controls that constrain the operational efficiency and financial flexibility of a government agency.

Specifically, this restructured government corporation should:

—be wholly-owned by the Government and considered an instrumentality of the United States;

—establish a Board of Directors, management organization and incentives, and accounting principles that will encourage and support profitability prior to privatization;

—have the authority to establish prices for its commercial products, materials and services as it deems appropriate in order to maximize its profitability;

—be outside the annual appropriations process and Gramm-Rudman-Hollings sequestration control; and

—develop and begin to implement a capital market access strategy by having responsibility, to the extent possible, for all capital financing for system improvements, including the future expenditures for development and deployment of AVLIS.

As a result, the restructured government corporation would be able to:

—provide a reliable, competitively priced supply of enriched uranium;

—operate for a reasonable period of time during which the barriers to privatization can be analyzed and, where possible, removed;

—establish a history of successful operating and financial performance, i.e., a track record, that will motivate private interests to pay the highest possible price in the event of the ultimate privatization of the UEE;

—determine capital funding decisions based on economic considerations rather than the political factors that have influenced capital spending decisions in the past; and

—conduct its affairs in a less politicized environment, so it can be managed in an efficient, business-like fashion.

The Project Team also believes that the AVIS technology can be a significant factor affecting the government corporation's ability to compete in the emerging short-term/spot market. With the DOE's cost estimates, or those more conservative estimates by the Project Team, the deployment of AVLIS has the potential to produce significant savings in the UEE's cost of producing enriched uranium. However, the Project Team is concerned whether this technology can be commercially deployed in a timely manner to achieve its potential. As a result, the Project Team recommends that the development, deployment and licensing of AVLIS be accelerated, where possible. We further recommend that the future AVLIS research and development costs, and all capital costs required for the deployment of AVLIS, be borne by the restructured government corporation or its successor private corporation.

Senator FORD. Thank you very much, Mr. Secretary.

I think before we get into questions we will ask Mr. Timbers to give his statement, then we might have some questions we can bounce off both of you. And then we can have a colloquy as it relates to some of the questions that Senator McClure and I might propose.

Mr. Timbers, if you would proceed, then we will get to the questions.

STATEMENT OF WILLIAM H. TIMBERS, JR., MANAGING DIRECTOR, SMITH BARNEY, HARRIS UPHAM & CO., INC.

Mr. TIMBERS. Thank you, Mr. Chairman.

I appreciate the opportunity to appear before you today to present the testimony of Smith Barney concerning the Department of Energy's Uranium Enrichment Enterprise, or the UEE as I will henceforth refer to it, and the independent financial assessment of the UEE conducted by Smith Barney earlier this year.

The business environment and the operations of the UEE have been subject to significant challenges and changes over the past decade. In recent years, various restructuring alternatives have been proposed to meet these challenges, and currently several legislative proposals are being considered by Congress.

In order to assist in these deliberations, the Department of Energy engaged Smith Barney, together with its project team, to conduct an independent financial assessment of the UEE and the pending legislation. As a preface to describing the assessment conducted by Smith Barney, I would like to first describe our view of

the challenges the UEE faces today and will be facing in the future.

The UEE is currently structured as a business enterprise within a Cabinet department of the U.S. Government, yet it operates in a highly competitive and mature global industry. The UEE was originally created in the 1950's to serve the military requirements of the government. Today, however, commercial utilities are the principal customers.

In less than 20 years the UEE has gone from a position of near global monopoly in supplying enriched uranium to the noncommunist world to a current market share of approximately 45 percent. Intense competition will continue. This is due to significant existing inventories and excess enrichment capacity, with very little increase expected in world demand through the end of the century and beyond.

Utilities that purchase the UEE's enriched uranium have begun to notify the DOE that they intend to terminate their long-term contracts. This trend towards termination is expected to grow.

A significant low-cost spot market for enriched uranium has begun to develop, which utilities believe to be both broad and reliable. This movement toward a short-term market has been accelerated by the sale of low-cost inventories by foreign suppliers, further exacerbating the supply/demand imbalance in the world marketplace.

The depth of existing spot supply and unused production capacity have caused a growing number of utility customers of the UEE to conclude that there is little risk of supply failure. Therefore, they view the spot market purchases at reduced prices as not only reliable, but also cost-effective and prudent. As this market develops further, it will put additional pressure on both UEE's market share and revenues.

Furthermore, the UEE is responsible for very significant current and future environmental cleanup costs that are associated with continuing operations, as well as the cost associated with the ultimate decommissioning and decontamination requirements for the UEE's enrichment facilities.

It is these challenges, among others, that set forth the stage for a thorough and timely review of the optimal business structure of the UEE for future competitiveness that was conducted by our firm. Smith Barney's independent financial assessment of the UEE was conducted in four phases.

In the first, all available historical and projected data concerning UEE's operations, finances and market environment were compiled from the DOE. Additional information and perspectives about the UEE were either offered by or solicited from OMB, GAO, various UEE utility customers, regulatory agencies, such as the EPA and NRC, trade organizations, taxpayer groups, UEE suppliers of electricity, existing UEE contractors, and the staff members of various congressional committees.

This information was compiled, sorted, and where possible, computerized for efficient retrieval and analysis.

In the second phase of our assessment, this data was evaluated to determine its reasonableness and accuracy. Where necessary, additional data was compiled or developed to replace existing informa-

tion that we felt was insufficiently accurate or, in light of all other available information, was determined to be unreasonable.

The third phase involved the development and implementation of a comprehensive computer model to analyze the economic effects of 50 alternative restructuring scenario relative to the UEE status quo. These analyses extended through the year 2005, and involved comparisons on the basis of both annual cash flows and net present value.

In the fourth and final phase of Smith Barney's assessment, the findings from the analyses completed in the prior three phases were integrated and the conclusions and recommendations I will be summarizing later in my testimony were developed.

In addition to analyzing a variety of alternative proposals for restructuring the UEE and making various recommendations, Smith Barney's independent financial assessment of the UEE also formulated a recommended strategy. Each of these aspects of the assessment were based on meeting several goals.

The most important of these goals were, one, applying the lesson of the UEE's history, that is, that the future direction of the UEE should be predicated primarily on economic considerations. In order to assure this principle, the UEE should be insulated from the political and policy agendas that have historically affected its decisionmaking.

Two, identifying a structure that would maximize the value of enrichment operations to the Treasury. A value-maximizing strategy that would seek to deploy enrichment assets so as to yield the highest return to the Treasury. The income produced thereby would be used to offset some of the government obligations from prior UEE operations.

Three, assuring a reliable and economic source for enrichment services for both commercial and military applications. A growing percentage of U.S. utility customers are purchasing enrichment services from foreign suppliers, including the Soviet Union. However, national security considerations dictate that enriched uranium requirements for weapons needs, as well as some portion of the commercial nuclear power market, should be served by domestic suppliers.

This goal becomes especially significant in the context of a national energy policy that seeks to maintain access to the nuclear option as a future source of energy supply.

And finally, No. 4, providing a comprehensive and workable approach for addressing the environmental, health and safety issues associated with the continued operation and ultimate decommissioning and decontamination of the enrichment faculties. A fundamental objective of any restructuring effort must be the development of both a strong management capability and appropriate funding arrangements to assure that these issues are addressed adequately and on a timely basis.

A principal finding of Smith Barney's assessment was the identification of several key variables. Each of these key variables was determined to have a critically important effect on the UEE. In essence, any one of them individually could significantly impact the future feasibility and/or profitability of the UEE under virtually any conceivable organizational structure. Due to their importance,

these key variables were targeted by Smith Barney and its project team for more intensive analysis.

The first key variable, power cost, accounts for 70 to 80 percent of all UEE production costs, and almost 100 percent of marginal costs. It was determined through our assessment that DOE's projection for power costs were reasonable, and subject to two assumptions.

The first is that all the generating facilities providing power to the gaseous diffusion plants, or GDP's, are scrubbed to meet the requirements of the proposed Clean Air legislation.

The second is that the utilities providing power to the GDPs are willing to utilize the advanced chemical treatment technology that is assumed to be deployed in conjunction with the newly installed scrubbers.

Furthermore, we determined that DOE's power purchasing strategy is sound. This strategy emphasizes the use of inexpensive firm power for UEE baseload operations at the Portsmouth GDP, and the use of non-firm power for swing, that is, incremental operations, at the Paducah GDP.

The AVLIS technology was also identified as a key variable. In conducting our assessment, it was determined that any decision relating to AVLIS deployment will have a major impact on proposals for restructuring the UEE. Because of the uncertainties surrounding the projected cost, performance, and dates of commercial availability for the first AVLIS plants, and the difficulty of independently verifying the DOE estimates in these areas, Smith Barney and its project team concluded that it was necessary to convene an independent technical panel to review key aspects of the DOE's program for the demonstration and deployment of the AVLIS enrichment technology.

The panel was asked to provide guidance on how to incorporate DOE's current AVLIS projections in our overall analysis of the technology. Based on our analysis and information provided by the panel, we concluded that the AVLIS technology is sound, and its deployment as a commercial enrichment process is technically possible.

While we concluded that the planned development program to demonstrate AVLIS is reasonable, we also believe that the schedule for AVLIS commercialization is ambitious, due largely to difficulties in obtaining environmental and regulatory approvals.

Even with a higher adjusted cost provided by the panel, and the expected schedule uncertainties, we concluded that AVLIS is still the most attractive enrichment technology over the long run. However, the project team is concerned whether this technology can be commercially deployed in a timely manner to achieve its potential. As a result, the project team recommends that the deployment, development, and licensing of AVLIS be accelerated where possible.

The panel did not have a basis for developing a alternative schedule for AVLIS deployment, nor did it believe the information is currently available for the DOE to develop a much more reliable one at this point in time. However, experience with similar technology commercialization efforts at the DOE and other governmental agencies, suggested a five-year slippage in the current estimate for AVLIS deployment is a reasonable planning assumption.

Furthermore, a 50 percent increase in the SWU production costs, and a 100 percent increase in the plant capital costs over the current DOE estimates would appear to be realistic, based on the technical uncertainties and scheduled slippages that I have already mentioned.

It is important to note that the anticipated higher power cost from Clean Air legislation, significantly raising the UEE's cost of production, AVLIS could become even more critical to the UEE's profitability. As a result, its successful deployment could give the UEE a competitive advantage in the enrichment market in the post-2000 time frame.

Finally, the project team believes that the continued development and subsequent deployment of AVLIS, together with the related cost, should be the responsibility of a new government corporation. In this manner, the future use of this technology will be based primarily upon commercial considerations, rather than the type of conflicting political factors that have influenced other UEE capital investments.

Our third key variable concerns Soviet supply and other inventory sales. Soviet SWU has been sold to Western countries since the early 1970s. In the past few years, nuclear fuel trading companies began offering Soviet SWU and enriched uranium product on the spot market.

In addition, large excess utility inventories have recently been placed on the market. The result has been further erosion in the spot price to about $50 per SWU, and the growing perception that the large quantities of low-priced SWU are sufficiently available to allow customers to further reduce their reliance on long-term suppliers.

Soviet supply and the trading of excess inventories has, in large part, been responsible for this fundamental change in the market for SWU. From the historic market, driven predominantly by long-term contracts, and in which price was largely dictated by the DOE, to the current market, where there is increasing reliance on the spot market that is supplied by DOE's competitors.

Our analysis indicated that the pricing of Soviet SWU is not driven by cost recovery or other conventional market principles, but rather by a desire for hard currency. Because of this, attempts by the UEE or a restructured corporation to compete on price would be fruitless, and would be likely to result in a downward price spiral. Instead of engaging in price competition, Smith Barney believes that the UEE or a restructured government corporation can significantly improve the position by directly purchasing Soviet SWU and negotiating a concomitant reduction in additional Soviet sales.

The UEE can further improve its position by purchasing a portion of excess inventories available on the spot market, while at the same time reducing its production. By purchasing Soviet SWU or excess utility inventories at or below its avoided cost, the UEE can reduce the perception of excess supply by utilities, help to firm spot prices, and possibly reduce its cost.

The fourth key variable addresses the issue of unrecovered cost. A great deal of time and energy has been expended in the now longstanding debate over the subject of these unrecovered costs.

That is, costs which the U.S. Government has incurred during the operation of the UEE, but has not been able to recover as part of SWU prices. This debate has been centered on an accounting dispute as to both the inclusion of and the appropriateness of a recovery of a broad range of past costs.

This debate has attempted to define how costs of creating and supporting the UEE should be split between the nuclear industry customers on the one hand and the U.S. Treasury on the other.

After careful analysis, Smith Barney and its project team have concluded that this preoccupation with how to divide the cost detracts from the central and basically unrelated question of how best to ensure that there is something to divide. In the reality of today's competitive uranium market, the questions are no longer how much should you charge, but rather, how much can you charge in the effort to maximize profits; not how best to share past costs, but rather how to best minimize current and future costs so as to generate profits.

In assessing the economic feasibility of restructuring the UEE, our basic tenet was that the determination of a theoretical payback of unrecovered costs to various parties will have little meaning if the entity responsible for the payback is not alive and well and generating profits to support such a payback.

Thus, it is important to put the debate over unrecovered costs in the proper context. As a serious dialogue over whether or not the U.S. Treasury is being dealt with fairly, in terms of pricing of SWU, this debate is both relevant and important to government officials, and others who are concerned about answering this question before taking any action related to restructuring the UEE.

However, as a benchmark to the actual price to be charged in a competitive marketplace with overcapacity, this issue is irrelevant and potentially misleading in terms of creating a business-oriented entity, with the objective of maximizing the return to the U.S. Treasury.

Utilizing the independent expertise of Coopers & Lybrand, the accounting firm that was part of Smith Barney's project team, the full range of costs involved in this debate was reviewed and categorized. The project team's analysis began with an evaluation of the positions of DOE, GAO and the Edison Electric Institute on unrecovered costs, as of September 30th, 1989. We then categorized the treatment of these major expenditures in dispute into three general areas.

First, oversights and errors; second, judgments as to what portion of certain costs should be included; and third, policy decisions as to how to treat funds spent on excess capacity, excess energy demand charges and abandoned plant.

In reliance upon the Coopers & Lybrand analysis, Smith Barney and the project team believe there is no unrecovered cost and, in fact, there has been over-recovery of $1.170 billion.

Once again, we emphasize strongly that putting the measures in place that ensure the UEE can compete effectively is far more important to the real recovery of government costs than the debate that will likely continue as to who should pay for past government decisions that have led to the expenditure of billions of dollars on currently unproductive assets. The project team believes that the

best hope for the resolution of this debate lies in the potential of the future marketplace, as opposed to the theoretical dissections of past costs.

Accordingly, we believe that the best strategy for restructuring so as to maximize the benefits to the government would mandate that, one, all liabilities and prior costs which have been incurred prior to restructuring be left with the government; and two, the income paid to the government by the restructured enterprise, together with the proceeds from any future privatization sale be used to offset such costs.

Environmental cleanup and compliance costs comprise a fifth key variable. Although the DOE has recently embarked on a comprehensive investigation in plans to bring the GDPs into full compliance with environmental requirements, the UEE has only begun to deal with some of the more intractable problems. Over 40 separate Federal and State enactments, voluminous regulations, decrees, orders, and common law principles underpin the regulatory regime affecting these facilities.

Many existing conditions have not yet been adequately defined, and many legal and technical uncertainties as to applicable statutes and regulations remain. Jurisdictional overlaps, statutory ambiguities, and regulatory conflicts and complexities further preclude clear definition of the UEE's legal duties or potential liabilities.

The UEE's current budgetary forecast of needs and its five-year plans to support ongoing restoration, corrective action, and waste management projects at the GDPs do not address many of the areas of concern or any of the activities that will be required beyond 1995.

Thus, based on the work done to date, it is not possible now to calculate all the future expenditures that will be needed to satisfy environmental requirements, or to quantify the broad range of contingent and other liabilities with a reasonable degree of certainty. It is clear that much more work needs to be undertaken to clarify the regulatory regime applicable to the GDPs, and that the ultimate liability on the environmental side is likely to be a number far larger than anyone has officially acknowledged to date.

The uncertainty concerning environmental conditions and requirements at the GDPs not only complicates the analysis of any potential transfer of the GDPs to the private sector, but also affects the UEE's present operations and planning. Sufficient time and resources should be dedicated to reach two major objectives. First, to clarify the legal regimes applicable today and most appropriate for the future; and two, to identify and assess the full spectrum of costs and liabilities associated with past and future operations of the GDPs.

In any event, since the amounts involved would most certainly have an enormous negative impact on the viability of the UEE and any proposed restructuring, we have recommended that these costs associated with the UEE's operations prior to such restructuring should remain a direct liability and obligation of the government.

The sixth and last of our key variables concerns the magnitude and handling of decontamination and decommissioning, or D&D costs as they are called. Based upon the documents supplied by the

DOE and Martin Marietta, and interviews with members of both entities, Smith Barney and its project team determined that the D&D cost estimates presented cannot be relied upon with any degree of certainty.

We also believe that, even if the estimates of the levels and amounts of contamination were more reliable, the validity of the total D&D costs would still be questionable due to several variables that require regulatory classification. The final level of D&D costs can be significantly affected by evolving regulatory guidelines.

We recommend that a complete D&D cost study be commenced. The costs associated with D&D activities will have a profound effect upon the economic viability of the UEE and any restructuring would be impacted by the projected costs. Smith Barney and its project team believe, however, that those D&D costs associated with the UEE's operations prior to any restructuring should remain a direct liability and obligation of the government.

In light of this discussion of key variables, it is clear that the UEE has substantial preexisting liabilities relating to environmental cleanup and ongoing compliance in D&D. Furthermore, there are additional preexisting liabilities arising from the Tennessee Valley Authority contract settlement costs. These obligations arise from prior enrichment operations are sunk costs that will exist whether the UEE is shut down, restructured within the DOE, or transferred to a new, profit-oriented entity outside the U.S. Government.

Estimates for these various costs range in the billions of dollars and, in many cases, are not currently subject to quantification.

Efforts to directly recover all or a significant portion of these sunk costs from the UEE's revenues, together with a proposed payback of unrecovered government costs, are misdirected and ill conceived in the context of historical objectives and future business requirements. A requirement to recover these costs would merely serve to create a debt burden and contingent liabilities that will make ongoing enrichment operations infeasible, whether under their current structure or restructured either within or outside the government.

In a highly price-competitive marketplace, a restructured UEE cannot assume these costs if it is to obtain the goals I mentioned earlier. These preexisting sunk costs should remain with the government.

Furthermore, and to the UEE's credit, an increasingly competitive world market, where product price has become the dominant criterion for nuclear utilities purchasing enriched uranium, the UEE has maintained operating profitability. However, this current and near-term profitability is based upon long-term contracts that cannot be sustained when lower priced, short-term purchases begin to dominate the market.

As the UEE enters a period where successful competition will demand operating efficiencies, responsiveness to customer needs and pricing flexibility, it is constrained by a number of these factors, which include existing contracting and pricing inflexibility, the government's short-term budget and planning process, conflicting congressional mandates and Administration objectives, a lengthy and complex decision-making process, and the lack of a

single coordinated management structure that can establish and efficiently implement both short-term and strategic goals.

Upon integrating these findings, Smith Barney concluded that the best way to maximize the value of enrichment operations to the Treasury, and to achieve the other goals of this independent financial assessment, is to establish a true business enterprise in the private sector. Fundamentally, a private entity would be the most viable form of business that could compete effectively in the global market.

However, we believe that such an immediate transfer would be impractical due to, among other reasons, the UEE's current organizational structure, unknown contingent liabilities, the absence of clear regulatory requirements for existing and new technology, lack of a commercial track record, and uncertainties associated with the evolving, short-term spot market for enriched uranium purchases.

Furthermore, because of these factors, the sale of the UEE to the private sector at this time would result in significantly less than optimal value to the Treasury in terms of both price received from the privatization sale and annual cash flow available for distribution to the United States Government.

As a result, Smith Barney and its project team recommended, as a first step, the transfer of the UEE to a newly created government corporation. We believe it is critical to establish this proposed government corporation in a manner that will permit it to operate in a businesslike fashion. This necessitates that the government corporation, to the maximum extent possible, operate outside the political and bureaucratic environment that has historically affected the business operations of the UEE.

This can be best accomplished by forming the new government corporation with an organizational structure and other corporate attributes as close as possible to those of a private corporation. In addition, it is imperative that the corporation be free from those administrative and financial controls that constrain the operational efficiency and financial flexibility of a government agency.

Specifically, this restructured government corporation should be wholly-owned by the government and be considered to be an instrumentality of the United States; establish a board of directors, management organization and incentives, and accounting principles that would encourage and support profitability prior to privatization.

This restructured government corporation should have the authority to establish prices for its commercial products, materials and services as it deems appropriate in order to maximize its profitability. It should be outside the annual appropriation process and the Gramm-Rudman-Hollings sequestration control. And finally, it should develop and begin to implement a capital market access strategy for having responsibility, to the extent possible, for all capital financing for the system improvements, including the future expenditures for development and deployment of AVLIS.

As a result, the restructured government corporation would be able to, in our opinion, provide a reliable, competitively priced supply of enriched uranium; operate for a reasonable period of time during which the barriers to privatization can be analyzed

and, where possible, removed; establish a history of successful operating and financial performance, that is, a track record that will motivate private interest to pay the highest possible price in the event of the ultimate privatization of the UEE.

Furthermore, the restructured government corporation would be able to determine its capital funding decisions based upon economic considerations, rather than the political factors that have influenced capital spending decisions in the past. And finally, this restructured corporation would be able to conduct its affairs in a less politicized environment so it can be managed it an efficient, businesslike fashion.

Finally, Mr. Chairman, we hope that our independent financial assessment has contributed to the dialogue regarding the future of the UEE. We are prepared to be of assistance in any way that is appropriate and constructive.

Thank you.

Senator FORD. Thank you very much, Mr. Timbers. I realize the statement is long, but I wanted to hear you out and make it a part of the record so that there is no doubt as to what your report said and that you, representing the firm, substantiate what it said.

I want to acknowledge the presence of the Chairman of the full Committee, Bennett Johnston, at this time, and my colleague from Kentucky, Senator McConnell. We have submitted Senator Johnston's statement for the record. Do you have a statement, Mitch, you want to put in the record?

Senator MCCONNELL. I thought what I would do, Mr. Chairman, is just wait for my turn for questioning.

Senator FORD. Fine. Mr. Timbers, how would you advise the Uranium Enrichment Enterprise to position itself in order to compete successfully in the marketplace of the future?

Mr. TIMBERS. Mr. Chairman, there are three fundamental factors that are important for the future success of the enrichment enterprise in the future. One, they have to have competitive costs. Two, they need to have the ability and to act quickly and to price competitively. Three, they need contracting flexibility.

Now, in terms of competitive costs, one of the significant variables will be the implementation of the AVLIS technology. Now, whether it is the estimates provided by the Department of Energy or our more conservative estimates, this is a technology that can significantly reduce the cost of this enterprise. Even with our estimates, which are much more conservative than the Department of Energy, it reflects a 37 percent reduction in the average cost of production.

The ability to act quickly is to be able to respond quickly to the changing and evolving marketplace, and that is that the marketplace is evolving into a short-term spot market. There is an increasing level of request for bidding by customers. The UEE now is not able to respond with that quickness and to be nimble and fleet of foot. Perhaps even the Secretary of the Department of Energy would also recognize that is the case today. In order to respond effectively in the future, those requirements will be necessary.

Pricing flexibility is absolutely imperative in the future. In order to have short-term contracts, spot contracts, there needs to be more responsiveness to the needs of the customers, and that will be re-

flected in how this enrichment enterprise responds and their contracting flexibility.

Senator FORD. Secretary Moore, do you agree with Smith Barney's assessment of what happens to the enrichment enterprise if not restructured?

Mr. MOORE. Absolutely. I believe, Mr. Chairman, that if you look at the three factors that Mr. Timbers has just identified we probably, as a Government entity, could employ AVLIS, but the other two factors he acknowledged I believe we just about have done all we can do, as a Government entity, to achieve those. Only the corporation called for in the legislation can take us to those next two steps or issues satisfactorily, and so I agree with him totally, and I think we can only solve the last two of the three by going to the legislation that we have before the House now.

Senator FORD. Mr. Timbers, the Uranium Enrichment Enterprise has brought in revenues in excess of expenses for each of the last few years. This money is then returned to Treasury. Does this mean that the UEE is a healthy business? If it is, why, and if it is not, why not?

Mr. TIMBERS. As I mentioned in my testimony, to the credit of the UEE it has had operating profitability in the last five years, positive cash flow and positive net operating profits over three of the last five years. However, this profitability is due primarily, today, to the long-term contracts that are in place. These long-term contracts are now being—notification is being given to the Department of Energy that these will begin to be cancelled beginning in 1995. There is a new marketplace evolving out there in 1995 in which this profitability cannot necessarily be maintained.

Furthermore, as Secretary Moore indicated, in order to respond to this marketplace it is not just a question of pricing. One has to be able to move quickly, have a more efficient organization, and be able to operate in a manner that is more responsive to the customer needs. So while it is profitable today, there is a changing market out there, and in our judgment, to respond to that market will require a restructured organization so that it can have greater operational efficiencies and greater financial flexibility.

Senator FORD. Well, I think it is apparent that we have gone from about 100 percent of the market in 1972 down to 45 percent in 18 years, that there is a lot of competition out there. In fact, they have more than half of it.

Mr. MOORE. Senator, if I could add a note to that?

Senator FORD. Any time.

Mr. MOORE. Our analysis probably is not as complete on the future of the market, but we have also come up with the same line of when we start going into the red and not making a profit—in about the 1995, 1996 time frame. What I think people have to understand is that that is when this thing starts costing the taxpayers money. In the years when we make a profit, it does not cost anything. You know the taxpayers are making money and we have the money.

As we have noted, we have wiped out that debt of $364 million because we have been making a profit and that profit goes back into the Treasury, reduces the amount of money the taxpayers have ever put into this enterprise. But, if we do not move into this

Government corporation, we think we are going to start losing money in 1995 or 1996 and then the taxpayers are going to be paying for it, and every year you get that much less competitive, and you will lose more money.

The critics of this legislation, how are they going to explain that? It is not a matter of an asset, then. It is a matter of having something that is losing money, and what can you sell something that is losing money for? So now is the optimum time to move into a Government corporation, while it is a profitable enterprise, to try to keep it there so that the taxpayers do have something that is worth value.

Senator FORD. Mr. Timbers, how long do you believe it will take after the formation, and let us say after the legislation is completed and becomes law, after the formation of a Government corporation, to establish a successful track record that would make privatization feasible?

Mr. TIMBERS. The factors that will be key in the response to that answer vary from one company to another. It is always hard to make a judgment, but I would give a time frame between three and five years as a reasonable period in which a determination can be made about the operational efficiencies and also the financial flexibilities that I have described.

Senator FORD. Secretary Moore, do you agree with the time frame that it would take to have a successful track record that would put us in a position to privatize?

Mr. MOORE. Mr. Chairman, Smith Barney knows more about that than we do—they are in the private business, we are in the business of Government—so I would have to assume that their estimate is probably correct.

Senator FORD. Mr. Timbers, is there any urgency in the need to restructure? In other words, are you telling us, as Secretary Moore said a few moments ago, that we need to move now rather than later?

Mr. TIMBERS. Well, Senator, you know, it makes me think of, probably an analogy that is very applicable here, and that is that in the Uranium Enrichment Enterprise and in the industry worldwide there is a very highly competitive battle going to take place, and it is the kind of battle that I think any military commander would love to undertake and that is because we know when the battle is going to occur. We know who the combatants are going to be, we know where the battle is going to take place and we know what the factors are that are the key to success, here.

Senator, the battle is going to occur in the post-1995 period, when the contracts begin to expire and the spot market begins to dominate. The market where this battle is going to occur is going to be the United States marketplace. In the future post-1995 period, in excess of 70 percent of the uncommitted worldwide demand will be here in the United States. The combatants are going to be the United States, Urenco, Eurodif, the Soviet Union and other emerging countries that will act, depending upon what happens here in the U.S. Government with this restructuring. Keys to success, as I indicated before, are cost competitiveness, ability to act quickly, price competitively, and also to have contracting flexibility.

So, Senator, we know this is going to happen out there. We can tell you exactly what is going to occur during this time. As I say, any military commander would love to have that opportunity to form a battle plan to be able to prepare for that time. Now, in order to restructure the Uranium Enrichment Enterprise, it is not going to happen overnight. It is going to take some time to put it into place and to get the operational efficiencies operating. To the extent that that can occur now is the urgency, so that it can be a competitive operation when this battle occurs in the post-1995 time frame.

Senator FORD. Mr. Timbers, let us see if we cannot get something cleared up here. It has been reported in the media that Smith Barney's report—your report—shows that the Government will recover the same amount of money whether the enterprise is restructured and sold to the private sector, or if it is not restructured and the enterprise loses all of its customers. Is that a fair assessment?

Mr. TIMBERS. Senator, we think that that is not an accurate reflection of what our report represents. We have, as I said, analyzed a number of different scenarios on a mathematical model basis. We have looked at what the status quo is if you do not do anything versus what you have looked at might be a beneficial case, or a composite of a number of different items that will be beneficial to the UEE—status quo versus what we think might be the best approach during this time frame.

We see on a present value basis between those two alternatives there is a difference of almost $2 billion between the status quo and restructuring. Now, in terms of present value, that is in 1990 dollars today, if you look at the total cash flow over that period of time between those alternatives, there is almost $4.5 billion of cash flow difference between a restructured alternative versus the status quo, an increase of almost 75 percent increase of cash flow. Now, I would call that a significant difference between the two different alternatives.

Senator FORD. Secretary Moore, do you have any comments to make to that, or any feeling about it?

Mr. MOORE. We strongly agree with Smith Barney that there is definitely going to be a difference. Now, we are making projections as best we can. Our projection is between 1991 and 2005, and our projection is probably not as good as Smith Barney's, we see at least a $2.5 billion difference—at least—and it may be a great deal more than that.

Senator FORD. Well, I have a lot of other questions.

Mr. TIMBERS. Senator, I wonder if I might add one additional thought to that, and that is that in those number calculations—and what is interesting about looking at the UEE's financial profitability is that that includes—our estimate in terms of the best case only includes three years of AVLIS at Smith Barney's more conservative numbers. Now, the real benefit for AVLIS is in the post-2000 time frame, so that although our analysis only has to go out to 2005, if you look in the years thereafter that difference between doing nothing and restructuring the corporation will become even greater.

Mr. MOORE. Mr. Chairman, I would like to add one comment about this 1995 battlefield and the war that will be fought for cus-

tomers. We share that analysis, and we share that idea of when the fight is going to take place. I just came back from calling on our customers—substantial customers that we have now in Japan and Korea, and I have met with I think almost all of the utility customers we have here in the United States. Just last week, we had them in town.

All of them are watching this legislation. If this legislation becomes law, then they see we are serious about taking the high ground on that battlefield and emerging as number one and remaining as the number one supplier in the world, and even regaining lost markets. If we defeat this legislation and it does not pass this year, I am convinced we are sending a signal to them that we are not aware of the battle coming, we are not aware of when it is going to be fought, we are just blithely operating this business as usual and are going to go into the red and do not see what is coming down the pike. So this legislation is a very vital sign, a signal to send to the combatants in 1995, and we must do that this year. I think it is critical.

Senator FORD. Thank you very much. Senator McClure?

Senator MCCLURE. Thank you very much, Mr. Chairman. Thank you, both of you, for your testimony. I want to ask two or three questions. They are kind of preliminary in a sense, and yet they are the ones that deal with the heart of the problem and the proposed solution.

Mr. Secretary, is there real price competition in uranium enrichment services today in the world?

Mr. MOORE. Absolutely.

Senator MCCLURE. Are we really, as some are charging, selling SWUs at below the market today?

Mr. MOORE. We are not.

Senator MCCLURE. There are some suggestions made that you, DOE, have testified, or that you assert that foreign government-owned competitors charge $170 to $190 per unit in their own countries.

Mr. MOORE. We have to look at who they are selling to and their contractual arrangements. It could be an old, long-term contract. It could be a situation of where you have a brother-in-law deal between a country that has this enterprise and utilities within its country. We are selling our SWUs, we are trying to be competitive, we are trying to make money and we are making money as Mr. Timbers indicated, and so we are not selling below what it costs us to produce it.

Senator MCCLURE. The suggestion was made that you could charge more today than you are charging to domestic consumers in this country, and that that is measured by how much others are charging in their countries.

Mr. MOORE. No, that is totally incorrect. You have got to look at what is happening in our long-term contracts. They are going down steadily every year, to where, by the year 2000 we are not going to have any. All the competition, the battle field that Mr. Timbers is talking about, is going to be such that you have got to be the most competitive in price or you are not going to get the business.

Senator MCCLURE. Could we increase our margins by raising prices that we charge?

Mr. MOORE. Absolutely not. That is like Garfinkel's raising its prices when it is trying to go out of business.

Senator MCCLURE. I ask those questions because there is a fundamental difference of opinion that is being expressed. Some are saying we are already selling for less than we ought to charge, and that the way to solve the financial problems of the enterprise is simply to raise the prices.

Now that would be fine if indeed we have a monopoly, as we once did a number of years ago, or if indeed we are substantially underselling the international market today. Now let us just set aside for a moment the recent Soviet actions of selling their supplies on our markets at greatly reduced prices. We have a very great difficulty in the world today, when you try to measure and fair competition in world markets when you are dealing with countries with governmental enterprises. We have some of the same problem here deciding what our cost of operations are, and what are the true costs of production for a SWU in the United States.

I will not get into that question of whether that is fair competition or not, but as a matter of fact, they are selling on the spot market for far less. Now our markets developed with long-term contracts because of a great deal of uncertainty, and a very constrained supply. So people that were going to build plants wanted long-term supplies guaranteed under contract.

And part of our current problem also lies in the fact that there was quite a little capacity that was expected to be on line for which supplies were contracted. And now it is evident that those plants will not be on line, and therefore those who hold those contracts are selling those in the market as well. It is not just production capacity, it is excess in the market. And that tends to depress prices, does it not?

Mr. MOORE. Yes.

If you look at the chart that we prepared, the capacity side of this indicates that there is excess capacity from now past the year 2000 in the world, without any more enterprises coming on line, and there are at least two we know of that are planned to come on line.

Senator MCCLURE. Mr. Timbers, do you agree with that assessment on the basis of your analysis?

Mr. TIMBERS. Senator, I must say that under the existing contractual arrangements with the UEE customers, there is just—under the contract, under provisions of 161, there is just so far that you can raise it under the contracts.

Now there is demand out there. There is very little demand that is not committed, but there is demand out there that could be sold by any supplier, including the UEE. For the UEE to charge at a very high price, instead of the current price of $117 to $118, say the UEE were to charge $190, they would find no buyers. Because the spot market is being supplied at this time by foreign competitors: the West Germans and the Soviet Union are active in the spot market.

And it is because of this development of the spot market, and it is because of the development of the excess inventories out there that has changed the market the UEE operates in from the long-term market that you describe and the reasons why it was created,

to a short-term market, where customers, electric utilities, believe that it is broad and reliable today.

And we do not think there would be the ability for the UEE, either with the Department of Energy or restructured, to charge high prices and be able to maintain a profit.

Senator MCCLURE. Well, there are two or three factors that I think need to be explained—I need to understand them, and make sure that my understanding is correct. One is that we started out in this enterprise as a joint undertaking. It supplied the needs of our military establishment and it had capacity to deal with the commercial non-governmental enterprises of production of electrical power. Is that correct?

Mr. MOORE. Yes.

Senator MCCLURE. Now if we lost all our commercial customers, if they go out onto the market in a free market worldwide, and they leave the government enrichment services totally, what happens to the other side of that process, the U.S. Government military supplies?

Some have suggested, well, if it is cheaper, let us just buy it from the Soviet Union. That somehow seems to me to be a little anomalous to expect them to be selling supplies to us so that our military establishment can be strong enough to force them to spend more money.

Mr. MOORE. Senator, maybe we could order from the Soviets not only our enriched uranium for our Naval reactors, but we could probably buy our plutonium and our tritium from them, too, for our weapons.

Senator MCCLURE. Well, I suspect, if I read the newspapers correctly, we are going to have some treaties with them, and they are going to dismantle some weapons. Maybe we can just buy some strategic missiles from them.

[Laughter.]

Senator MCCLURE. So that we can aim them at them.

Mr. TIMBERS. I might make a comment about that.

Senator MCCLURE. Surely.

Mr. TIMBERS. In 1995, our battlefield—93 percent of UEE's revenues in 1995 will be coming from commercial customers; 7 percent of the UEE's revenues at this critical time will be coming from military customers. If we decide to do nothing the commercial market drops away. I do not know what the cost per SWU is going to be for those submarines, but I have got to tell you, it is going to be a whopping number. And those submarines are going to be very, very expensive.

Senator MCCLURE. Let alone any possibility of any recovery of imbedded costs.

And you did say 95 percent was in the commercial sector?

Mr. TIMBERS. In 1995, we estimate that 93 percent of the UEE's revenues will come from the commercial sector, and 7 percent will come from the military sector. And if you eliminate that component, if you give up on it, subs are going to be a very expensive item to operate.

Mr. MOORE. Senator, we agree totally with that. But I would like to add to that the fact that where then would we be on trying to get any return back to the taxpayer? If you have got an operation

that has no commercial value, no commercial customers, you have got strictly a government-run enterprise then for government purposes. Which means 100 percent of its operations come out of the taxpayers' pockets, whereas now money is going back to the Treasury, as a profit to the taxpayers.

And secondly, you would have almost no chance then of ever recovering anything for the Treasury.

Senator McCLURE. I want to emphasize just two points. One, when you talk about a profit, that is, if we believe that the sunk costs, or capital cost recovery, is to the point where there is zero owed. Then there is a profit that goes back to the Treasury.

Mr. MOORE. Well, there has been for the last 4 years. Or I think Smith Barney said 3 out of the last 5 years we have returned a profit, yes. A profit of income over cost of operation.

Senator McCLURE. Over operating cost.

Mr. MOORE. That is correct.

Senator McCLURE. That does not include any payback of sunk costs.

Mr. MOORE. That is right. But that profit went to reduce the amount of the unreimbursed costs.

Senator McCLURE. Yes, I understand that. You said in 1986, I think it was $364 million. And that has been totally recovered in the years since then.

Mr. MOORE. That is correct.

Senator McCLURE. And Smith Barney's estimate of the recovery of capital costs says there is nothing owed at this time. If anything, it has been overpaid. Is that correct, Mr. Timbers?

Mr. TIMBERS. That is our judgment, yes.

Senator McCLURE. Now, finally, it has been suggested by some that there is a tremendous rip-off of the taxpayers in the operation of this enterprise, and that, lest they be just carping critics, which indeed they may be, then they must assume that the change in operation is somehow going to benefit the taxpayers.

If I understand what they are suggestion is, raise your prices.

Now you have already indicated you do not think you can raise your prices because we are in a competitive environment in which raising prices would just lose customers. I think you both agree with that. And if raising prices in order to increase profits only loses customers, then you decrease profits rather than increasing them. And secondly, you probably simply close down the operation.

Where then are the taxpayers with respect to any unrecovered capital costs, if indeed they exist? And secondly, who pays for D&D, and what is the prospect for anybody paying for D&D except the taxpayers?

Mr. Secretary.

Mr. MOORE. The answer to all your questions I think is obvious, and I agree with you totally that we are not running a fraternal benefit society here. We are trying to make money. And we are trying to sell for as much above our cost of production as we can get customers for. And we sell to the Japanese and the Koreans and others around the world. We are not doing this as a gift. We are trying to make money at it as best we can.

And what Smith Barney is saying and what we are saying is, by 1995, that is going to get to be a point where we are not going to be

making the money we are making now as our long-term contracts expire. And if we are not in a competitive mode, we are going to be in the red. And how much further we go into the red each year in operations directly affects the taxpayers.

Every year we are in the red, money will have to come out of the Treasury, which we have not been doing in the last 3 or 4 years; we have made money.

Senator MCCLURE. Regardless of what the theoretical debate may be about cost recovery, the recovery of imbedded costs, regardless of what that theoretical argument may be, if the enterprise closes, there is nobody to pay those except the taxpayers.

Mr. MOORE. Absolutely.

Senator MCCLURE. Either they have been repaid or they have not been. And if the enterprise closes, the taxpayer eats it.

Mr. MOORE. I think Smith Barney can testify better than I can to the fact that if we close the enterprise, all you have got is scrap value. And that is not going to be worth nearly as much to the taxpayers as a going, profitable enterprise.

Senator MCCLURE. Well, you have got one other thing that is involved here, too, and it has been referenced a time or two, and that is D&D costs. If the enterprise is going and making money, you have a chance to recover something with respect to future D&D costs.

Mr. MOORE. That is correct.

Senator MCCLURE. If the enterprise is closed, there is no source of revenue except from the taxpayers, through direct appropriations. Is that not correct?

Mr. MOORE. That is correct.

Senator MCCLURE. I keep trying to get into my head where the critics come from, for if indeed the enterprise closes, how that protects taxpayers. If the enterprise is today generating positive cash flows, their revenues are greater than the direct operating expenses, there is some margin of money moving towards the government, regardless of what it is or what it might be. But if you close it, that is completely lost.

I am reminded a little bit of the issue of so-called below-cost timber sales. We have seen much in the environmental press and in the popular press about closing down government operations that cost the taxpayers money. We have got a good, good demonstration right now under an exercise which I believe to be illegal, but nevertheless, that does not deter OMB much, when they decided we ought to close down 10 forests' timber sales because they are below cost.

And I looked at one of them, which happens to be the Beaver Head in Montana. The Beaver Head Forest in Montana was one of those so-called below-cost operations. So we will close down the timber sales. Guess what happens to the budget. It goes up. The cost to government rises without timber sales. The only thing that goes down is revenues. What a great deal for the taxpayers.

And so I see a similar kind of lack of understanding that two plus two equals four in this. Some think we have something that looks bad here, so let us stop it and soak the taxpayers even more of even more money. It is a kind of "Alice in Wonderland" world view of economic enterprises. And I wish some of the people who

are saying that would try the private sector once. They would go broke in 6 months. And then we would be done with them.

Mr. MOORE. Senator, that is precisely why we, after great thought and consideration, engaged Smith Barney. They are not in cahoots with the Senate or the Administration or the House of Representatives. They are in fact an independent business enterprise that looked at this business enterprise and proved exactly what you are saying.

Senator MCCLURE. Well, I do not think anybody can question the credentials of Smith Barney, and I do not think anybody would attempt to impugn the credentials of Coopers & Lybrand who did some of the financial analysis work for you.

I want to repeat something you said, Mr. Timbers, because it goes right to the heart of the matter. Let us get out of this theoretical question of whether capital has been recovered or not. Let us get away from this theoretical question of, gee, would it not be nice if we still had a monopoly and we could sell for what we want to charge, which is a myth.

On page nine of your statement, and I will read a part of it, "In the reality of today's competitive uranium enrichment market, the questions are no longer how much should you charge, but rather how much can you charge in the effort to maximize profits; not how best to share past costs, but rather how best to minimize current and future costs so as to generate profits."

And you go on in the next sentence to say, "A theoretical payback of unrecovered costs to various parties will have little meaning if the entity responsible for the repayment is not alive and well and generating profits to support a payback."

Now that is where I believe we are. That is where I generated my own reaction in support of the legislation that has passed the Senate. Now if, indeed, that is the real world, and I believe it is, I do not understand how anyone can suggest there is a better way to do it by closing down the corporation. Or by increasing the prices which have that inevitable result.

There have been a lot of people out there in the private sector who saw their profit margins shrinking who sought to improve their profit margins by raising price and went broke. You know you do not have to be a Ph.D. in economics or even have an MBA to understand that if you cannot sell, you do not generate profits. You may sell too low to generate profits, but if you get too high and cannot sell, you do not generate any at all.

Now it looks great on paper until the marketplace tests it. And when the marketplace tests it and you cannot sell anymore, you are done. I think that is exactly where we are, and I certainly do appreciate DOE's taking the step that was necessary, perhaps, to give greater credibility to the arguments. The Smith Barney study I hope does that.

The only way people can criticize the results is to impugn the integrity or the ability of the people who performed this study. And that is why I think it is important for us to look at the last statement you made, Mr. Secretary. They are not stooges for the Senate. They are not stooges for an industry. They are professionals making a professional evaluation. And that is what we ought to listen to, is what the professionals are telling us, not a bunch of

rank amateurs out there who have never made a buck in their life, who are trying to tell us that the way to run a business is to price yourself out of the market.

Thank you.

Senator FORD. I can see it now—"The Battlefield." That will be the next cartoon they will bring up, and they will have Secretary Moore up here shooting an M-1 and somebody up here shooting a cannon. It is interesting.

[Laughter.]

Senator FORD. Senator Johnston.

STATEMENT OF HON. J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

The CHAIRMAN. Thank you, Mr. Chairman. Thank you for holding this hearing.

I want to congratulate DOE and Smith Barney—DOE for hiring Smith Barney, and Smith Barney for coming up with what I think is an excellent report, which I hope will lay to rest this nonsense about debt from the utilities to the Department of Energy. I think your statement of zero debt is very clear, convincing and unarguable. I also think it is somewhat irrelevant. It is not irrelevant politically, but it is certainly irrelevant in the real world, because I mean if there were debt of $1 trillion, that does not mean you can recover it.

I think, to me, this whole thing—I mean, there are some complexities in the business, but the fundamental principles are so simple—so simple. You can phrase it this way, I think, and that is, does the United States want to keep what it has got, which is a $1.5 billion business, including over $400 million of exports, employing some 5,500 employees—all of those figures can grow—or does it want to abolish that? It is just as simple as that.

We had former Secretary Schlesinger testify in this Committee the other day on the growing energy dependence which we have. He stated by the year 1995 we will importing two-thirds of our oil and that the part of the trade deficit attributable to energy imports will exceed all the rest of the commercial part of the trade deficit. Now, if that is so, that is such a stark fact for this country to face, and this is part of it, because—this may be a small part of it, but $1.5 billion is not chicken feed, and that can grow, or we can abolish it.

Now, there are some parts of that energy import deficit which are perhaps we face up to, and we say it is not worth it. Drilling off California would produce jobs, would reduce the trade deficit, but is an environmental insult sufficient to cause the President to say, let us not drill there, at least for ten years. Now, is the uranium enrichment business such a dangerous, dirty, difficult business that we do not want the jobs, that we do not want the industry in this country, Secretary Moore?

Mr. MOORE. Absolutely not, Mr. Chairman. We believe, especially with the new AVLIS technology, that we can operate in a much more environmentally safe and healthy way than we have operated in the past, and we think we have made tremendous strides in operating our present diffusion plants in that regard. But I think

that the idea of becoming that much more energy dependent by having to buy enriched uranium from sources overseas is not something the American people want. That is certainly not going to be something we would have in our national energy strategy that we have to come up with by the end of this year.

The CHAIRMAN. Well, the fact of the matter is that uranium enrichment is one of the relatively speaking very benign, very safe, very desirable kind of jobs to have, is it not?

Mr. MOORE. Without a doubt, and on top of that, we have a military necessity for this enterprise—Senator McClure and I were speaking earlier about this idea of junking the enterprise. We could never do that. The American people, the Congress, no future President is ever going to say that we have got to buy all the fuel for our nuclear submarines, one of the most important elements of our defense, from somebody else. We are never going to do that, and so this enterprise is always going to exist. The question is, is it going to make money for the taxpayers, or is it going to lose money; and if we depend strictly on military business, it is a 100 percent cost to the taxpayer.

The CHAIRMAN. Secretary Moore, I am sorry you did not put this chart in as part of your statement, that you showed us yesterday, but to me this tells just about the whole story—this and the next chart which you gave us yesterday, neither one of which are part of your statement—which shows the percent share of the DOE of the world market under firm contract, and it shows back in 1974 that we had under firm contract 100 percent of the world market.

We come along to the present time, and between now and 1995 we will have about 45 percent under firm contract, of the world market, and if that figure goes down to zero by the year 2000, now—first of all let us talk about firm contract. Firm contract means that you can charge according to the price formula which is based upon cost, and that allows you some flexibility to charge above the world market, does it not?

Mr. MOORE. It has in the past, because the world market has changed after you have signed the contract, but that is why it is going down to zero. Utilities around the world are not willing to sign a long-term fixed contract now that they think they can do better in the open market.

The CHAIRMAN. Well, your average price now is—well, your official price is at $118, and your incentive price is $100. What is your average price?

Mr. MOORE. We think right now it is about $110 a SWU.

The CHAIRMAN. But you can get it on the world market at $50?

Mr. MOORE. You can now, at the present moment. That is correct.

The CHAIRMAN. The only reason that is possible is because you have got your firm contracts here, which begin to phase out to zero?

Mr. MOORE. That is correct.

The CHAIRMAN. So everyone should understand that it is not because of competition, because you are competitive, that you are able to keep $1.5 billion market. It is because you have these people captive under these firm contracts.

Mr. MOORE. That is correct.

The CHAIRMAN. Now, as I understand it, more than $1 billion worth of sales, which are of contracts which are scheduled to terminate between 1996 and the year 2000, these contracts in here, they have already given you notification that they are going to terminate?

Mr. MOORE. That is correct.

The CHAIRMAN. In the old days, even though you might now be totally competitive, they wanted to do business with DOE and so sometimes they would ignore a little price differential, but no longer is that true.

Mr. MOORE. Well, they are certainly not willing to sign a long-term contract on that basis. We may be able to keep some of their business based on long-term relationships and based on the fact that they see us becoming competitive and they see the AVLIS contracts coming on and they may want to stay with us, but there is no guarantee of that. None whatsoever.

The CHAIRMAN. Well, there are some who say well, we ought to increase—put some kind of fee on. One proposal says well, we ought to put a fee on to recover these costs which Smith Barney has now, I think, definitively shown are no longer owed. But let us say OMB wants to get a lot of money. They think we have got a cash cow here and they want to milk it, and so they put a tax on.

One proposal is that you put a tax on for past unrecovered cost and for past uranium used. In effect, a retroactive tax. Now, do you think there is a constitutional lawyer in the world who would let you come in and charge a retroactive tax—retroactive fee for services rendered? I mean, for uranium purchased in the past that you have already paid for?

Mr. MOORE. Absolutely not. We have got a signed contract. I think we would lose. I think the only way to do something like that would be to have the Congress pass some kind of a retroactive tax, and I think you are a better judge than I am of that, but I cannot imagine that having any chance of passage in the Congress at all.

The CHAIRMAN. Now, suppose we wanted to build a tariff barrier around the United States. First of all, we have a free trade agreement with Canada. Would a tariff on imported uranium—enriched uranium—violate—I think the answer is very clear, it would violate the free trade agreement with Canada, would it not?

Mr. MOORE. Yes.

The CHAIRMAN. So I mean, that is the reason why we cannot have an oil import fee relative to Canada. At least that is what DOE tells me, and we could not do it with uranium either, could we?

Mr. MOORE. That is correct.

The CHAIRMAN. Even if we tried to do that, we would lose all our foreign sales, because those sales are what, now, $400 million?

Mr. MOORE. Yes, something like that. Mr. Chairman, it is also a matter of fact this is just not this Administration's policy to solve a problem of being noncompetitive by erecting a tariff barrier and saying we are just going to withdraw within the confines of the United States.

The CHAIRMAN. Well, I know it is, and I think it is the proper policy for the country, and I cannot imagine that we would try to erect that tariff barrier, and particularly in the face of our trade

agreement with Canada and others. I mean, it would so do violence to the very fabric of all of our trade policy if we tried to do that, but that is what you would have to try to accomplish.

Mr. MOORE. It is also unfair to the electric consumers of the country. What you would be telling them is, then, once you erect that tariff barrier you have destroyed any incentive for us to be efficient and for us to get our costs down as low as possible.

Then we become a monopoly, and we can just charge whatever we want to the utility companies of America, which means that utility ratepayers—the homeowners, the businesses of the country—would pay for that then, and I do not think they would stand for that for one minute. They want to generate electricity at the cheapest possible cost so Americans can enjoy electric power at the cheapest possible cost. You do not do that with a tariff barrier.

The CHAIRMAN. It is really a domestic tax.

Mr. MOORE. Exactly.

The CHAIRMAN. Well, I have been trying to analyze what the motives of those who oppose this plan are, and for the life of me the only thing I can figure out is just the anti-nuclear bias, that in order to stop nuclear energy they attack it at every part of the nuclear cycle.

Those parts which are benign and are safe, such as uranium enrichment, they spread information that it is not safe, which is clearly not true, but you know, in a time of emotionalism and lack of information you can spread that, and then they want to put these fees on in order to run these jobs out of the country, in order to lessen the support for nuclear energy, at least from those who would profit by it, have jobs by it, et cetera. Can you think of any other rational reason?

Mr. MOORE. Mr. Chairman, you are right on target. The Smith Barney report, the reason why we got it was to obtain objective, independent answers. We took a chance. The Smith Barney report could have come back and said, this thing will never make money and it would be a terrible business enterprise. The report did not say that, thank goodness. The report came back and laid to rest, once and for all, criticisms of this being a good or a bad business proposition for the American taxpayer. That issue is no longer on the table.

So people who oppose this now, you have got to assume they may have some motivation other than worrying about the taxpayer. The motivation cannot be concern for the taxpayer. Smith Barney has laid that to rest 100 percent.

Mr. Chairman, you said a moment ago something that is very salient that I want to pick up on, if I could. You said that whether DOE figures the taxpayers are owed $3 billion, or whether, as Smith Barney says, they have been overpaid already $1 billion, is irrelevant, and you are absolutely correct. The only way the taxpayer is ever going to get anything—one penny—is if this thing makes money and ultimately can be spun off and sold and money goes into the Treasury, and the market is going to determine that, and if it will be $3 billion, $8 billion, $1 billion, $100 million, $50 million—who knows.

But the only way the taxpayer is ever going to get anything is to move this into a Government corporation, have it operate very suc-

cessfully, make money and pay dividends back to the Treasury, and then ultimately be sold into a private corporation and have the proceeds of that go to the Treasury, so that it makes no difference what the calculations are of how much money is owed the Treasury. The only way you will ever get anything is for this thing to operate and to move forward as we are proposing, and as the Senate has voted.

The CHAIRMAN. I think you are absolutely correct, and I appreciate your eloquence in stating it.

Now, let me shift gears quickly to one other issue, and that is AVLIS. Now, in the Smith Barney report, it points out that AVLIS, as I recall, is not likely to be financially successful until the year 2003 I think.

Mr. TIMBERS. We do not anticipate the AVLIS technology to be deployed until the year 2002. We think, at such time as it is deployed, that it will be a very successful technology that will reduce production cost for the UEE.

The CHAIRMAN. Well, that was the point I was going to make, was that AVLIS, when and if it is successful, and I hope that it will be, is a long-term proposition involving big, up-front investments, and hopefully big, long-term pay-offs, but those pay-offs would not be until probably after the year 2003, or in that time frame.

Mr. TIMBERS. Senator, there are actually two points about this. One, that there has been discussions that, gee, with the great capital cost associated with AVLIS in terms of your report, Smith Barney, it does not seem you have much return coming out of it. In our report we state that between the year 2002 and 2005 that there is a benefit of $170 million. Well, that is correct. That is our conservative numbers. If you use DOE's numbers, in 1997 and with their cost it is a benefit of $545 million, but AVLIS is going to cost several billion to build.

Now, the key thing here is that in the time frame of 15 years, in our analysis, it is just there for three years, right at the very end, and if we are talking about 1990 dollars, as you know, with the time value of money, you bring that back to 1990, it is not very significant. So that it should be kept in context that the expenditures for AVLIS are to be—the benefits are to be reaped in post-2000 time frame, not just a small three-year horizon that we have in our study. Our study is artificial in its limitations.

The CHAIRMAN. The AVLIS, we plan to put everything in this corporation which we hope eventually will be spun off as a private corporation after it gets on its feet. I would hope that that spinoff to private enterprise would be well before the year 2003.

So the question arises, should AVLIS go into this corporation now, or should it be developed by private enterprise rather than by this corporation?

Would you speak to that, the pros and cons?

Mr. TIMBERS. Senator, I think you raise an excellent point on this. And that is that in our perspective here, that the development of AVLIS, the deployment of AVLIS, the licensing of AVLIS should be done by the restructured corporation.

The activities surrounding it should be done by the restructured corporation and, most significantly, the cost associated with doing that should be borne by the restructured corporation. It should be

borne in terms of a capital financing structure such that a business decision is made if this technology makes sense for this enterprise on a business basis, and that is, a business basis that it is economically viable to deploy, build and license, then this company, or this restructured corporation, should have the wherewithal to be able to finance it, and should have the responsibility of doing so.

Now that is I think an important tenet, that there is no debt of this corporation. We do not think there is, justifiable, any debt in any restructured corporation, but this is not a free lunch. The responsibility of financing AVLIS and constructing AVLIS should be with this restructured corporation. And the decision should be based on economic considerations, and not on political factors.

The CHAIRMAN. Well, will the restructured corporation have the wherewithal to borrow the money on its own independent hook, or will it need the faith and credit of the government in order to borrow that kind of money?

Mr. TIMBERS. In our perspective, in our recommended structure, we would hope that, by the time that the construction of AVLIS is required, a sufficient financial track record would have been established by this corporation such that it would be able to raise the capital on its own. Now we do have in our recommendation that if this access to capital is not readily available, that there would be guarantees or some sort of support by the U.S. Government.

First of all, we feel that that support by the U.S. Government in the form of a guarantee or some other financial backing, it would hopefully be for the betterment and improvements to the system prior to such time that AVLIS is built. But you are correct that by the time that the capital expenditures are needed, in our judgment, there would be a sufficient financial track record established to be able to raise that capital in the capital markets.

The CHAIRMAN. Now, you are saying that we will not need that money for AVLIS until the corporation has been in operation a sufficient time to have established a track record, build a profit, and reclaimed all these contracts?

Mr. TIMBERS. First of all, we think that there is sufficient cash flow out of the operation today to pay for R&D costs. We estimate R&D costs for AVLIS to be slightly higher than DOE's, but we feel the cash flow is there sufficiently to cover it.

The CHAIRMAN. What is your investment profile on AVLIS, your cost profile?

Mr. TIMBERS. In terms of the expenditures?

The CHAIRMAN. Yes.

Mr. TIMBERS. Well, there is the anticipation today by the Department of Energy that a construction license would be granted in March of 1993. We anticipate a slight delay, and we thank that delay might last until 1995. Now in 1993 to 1995, it is within this time frame that I mentioned to Senator Ford——

The CHAIRMAN. And how much money would you need by that time?

Mr. TIMBERS. By that time?

The CHAIRMAN. So you give them a construction license, then they are going to let a contract.

Mr. TIMBERS. Yes.

The CHAIRMAN. Do they have to have all their money in hand before they do that?

Mr. TIMBERS. No.

The CHAIRMAN. How much are they going to need a year?

Mr. TIMBERS. I would have to defer to DOE on that. We do not have the construction drawdowns anticipated for that.

The CHAIRMAN. To me, it seems that without some kind of guarantee by the U.S., you are not going to be able to borrow the amounts of money in time to—I think otherwise you would have to wait. You are not going to be able to borrow enough. And if you cannot borrow it without a guarantee, how do you avoid an S&L bailout situation?

Mr. TIMBERS. Senator, you are correct. It is right there on the cusp that the money is needed at such a time when the battle is going to be fought. You know it is five years from now. And at that time, there may be sufficient time in this five-year interim period to be able to develop a successful financial track record to raise capital in the marketplace.

Now raising capital in the marketplace is not just predicated on what you are bottom line is. It is based upon a number of different factors in terms of competition, how you are dealing with the marketplace, what share of your market you may have, and what is the quality of the management running the organization. All these things come into play.

The CHAIRMAN. And how successful AVLIS will be. Not everyone believes in AVLIS. Not everyone believes it will be financially good. I think it will.

Mr. TIMBERS. One interesting point to that is, first of all, there is on schedule a demonstration program for AVLIS, which should go a long way to demonstrate that it is successful. And a fairly significant judgment can be made at that time.

And second of all, we have suggested in our report that although AVLIS is now being projected to be constructed in a modular-unit basis with 9 million SWU capacity, we felt that it might be best to start with a 3 million SWU capacity. There are obviously less capital costs associated with that.

The CHAIRMAN. Well, I do not think we have to solve the AVLIS problem as part of this legislation. I think we need to get on with this legislation now. But I think probably, as a separate study, as a separate inquiry, we need to determine whether or no we are going to need guarantees on AVLIS, keeping in mind that S. 83 has only private borrowing. It does not have faith and credit. And whether or not the lack of faith and credit would slow down the development of AVLIS.

And it seems to me that the timely development of AVLIS is a very important thing. I mean if you are going to stretch it out, and then you have got to improve your facilities more, you are going to have to have more of a bridge between here and AVLIS, a longer bridge. And if you do require government borrowing, then I think we ought to analyze further the question of whether AVLIS ought to be within the corporation, or whether it ought to have the discipline of true private enterprise out there. I mean the discipline of saying the money you spend on AVLIS has got to satisfy the market sufficient to get them to lend to it. And that is an impor-

tant discipline. And I think we ought to look at that as a separate inquiry, separate from this bill.

I do not know how we start that, but I think we should do that, gentlemen.

Thank you very much, Mr. Chairman.

Senator FORD. Thank you, Mr. Chairman.

Senator McConnell.

Senator MCCONNELL. Thank you, Mr. Chairman.

I would ask that my statement appear in the record.

The CHAIRMAN. Without objection, so ordered.

[The prepared statement of Senator McConnell follows:]

PREPARED STATEMENT OF HON. MITCH MCCONNELL, U.S. SENATOR FROM KENTUCKY

Mr. Chairman, I commend you for holding this hearing to review the Smith Barney Financial Assessment of DoE's uranium enrichment enterprise. The Department of Energy's enrichment program enters the decade of the nineties facing unprecedented challenges, including heightened international competition, new environmental requirements, the need to successfully demonstrate and deploy the AVLIS technology, and the need for a successful transition to a government corporation. In light of these challenges, the Department of Energy's decision to conduct this financial analysis was timely and prudent.

The Smith Barney report contains good news and bad news. The good news is that, despite losing share of an increasingly competitive world market, the Uranium Enrichment Program has maintained operating profitability. The bad news is that several factors are constraining the program's ability to successfully compete. As the analysis points out, these factors include:

—contract and pricing inflexibility;
—the Federal Government's short-term budget and planning process;
—conflicting Congressional and Administrative objectives;
—lengthy and complex decision-making process; and
—lack of a coordinated management structure.

Clearly, the most significant result of the Analysis is its conclusion that to deal successfully with these problems, the Uranium Enrichment Enterprise should eventually be privatized. As an interim step, the analysis points out, the program should be transferred to a newly-created government corporation.

The Senate has moved in that direction by passing the "Comprehensive Uranium Act of 1989". As we all know, however, the bill is now languishing in the House. It is my sincere hope that the other body, upon examination of this analysis, will recognize the importance of the Uranium Enrichment Enterprise to our nation's energy and national security and act quickly on this piece of legislation.

Obviously, I have more than a passing interest in the competitiveness of the Uranium Enrichment Enterprise. Beyond its importance to the national and energy security of the country, the Enterprise is also vital to my state of Kentucky. The Martin Marietta plant in Paducah has been an engine of economic growth in Western Kentucky for the last 30 years. The plant directly employs about 1400 Kentuckians and supports thousands of other indirect jobs in the region. The plant also serves to attract highly trained specialists whose contribution to the community is not measurable in simple dollar terms.

Secretary Watkins has assured us that the Administration stands ready to sign the bill into law. It is up to the House to act. I commend you for holding today's hearing as a way of encouraging that body to do so and look forward to hearing from our witnesses.

Senator MCCONNELL. I think Senator Johnston put his finger right on it. There are certain groups that are simply against nuclear power. And I gather that is the reason that we are having difficulty on the House side. The one group I can think of, the League of Conservation Voters has been running around my state and other states simply do not support this bill, Senator Johnston, because they do not want us to have a nuclear power industry in the state.

You indicated that by 1995 you estimate that 93 percent of the enriched uranium would be purchased by nuclear-powered utilities. Is that correct?

Mr. TIMBERS. Ninety-three percent of the revenues received by UEE will come from the sale to commercial utilities.

Senator MCCONNELL. What is the percentage now, do you know?

Mr. TIMBERS. It is about 77 percent right now—in 1989 it was about 77 percent.

Senator MCCONNELL. So it is an obvious conclusion to reach that there will not be a U.S. uranium enrichment enterprise unless we have a healthy commercial nuclear industry?

Mr. TIMBERS. Right.

Senator MCCONNELL. A statement of the obvious, is it not?

Mr. TIMBERS. Yes, sir.

Senator MCCONNELL. Staying on the question of prospects in the House, Secretary Moore used to be in the House, and I know you are vitally concerned about this issue. We have been, in a sense, preaching to the choir today, because if we all agree on this bill, we all think it ought to be passed, the problem is not in the Senate, it is in the House.

I just wondered if you could give me an update, Secretary Moore, I know you follow this closely, about what you think the prospects are over on the House side, and where we stand.

Mr. MOORE. Three different committees have the jurisdiction over this in the House, which creates a difficulty all in itself. We do not have the luxury of dealing with just one committee. At this point, one of the three committees appears to be ready to move, and thinks they have the votes to pass legislation out of the committee. It has to go to two others.

One of the remaining two seems to be taking the attitude of let us see what the major committee of jurisdiction does, and we will follow their suit.

Regarding the third and the most important one, I guess, in the triad, we had a meeting yesterday with the appropriate subcommittee chairman who indicates now that he understands the situation and will have an answer back to us by the end of the week about whether he feels like he can move this legislation expeditiously through his subcommittee and the full committee.

We are pushing him and everybody on the House because we fully believe we have got to pass the legislation this year. And we have got to get it on the calendar and get it moving in those three committees and get it out to the House floor in time to go to conference and have this matter resolved before Congress perhaps leaves the 1st of October. And so that does not leave much time. And we are trying to impress upon them the fact that all the things we talked about today in the Smith Barney report and during our visits with our customers is a very important signal to send.

And the sooner we get into this corporation, the sooner we can begin to do the things that Smith Barney has outlined, begin to get this enterprise operating as it should, and be able to position ourselves in the market to get a return for the taxpayer, to pay for AVLIS, and do all the things we have to do. Every day we wait we

are losing an opportunity, and there is no reason to wait. There is absolutely no reason to wait.

Senator MCCONNELL. Well, I want to commend Smith Barney and you, Mr. Timbers, for this study. It obviously is irrefutable in my view, it makes a case for the legislation. And I hope that the House of Representatives will respond.

Secretary Moore, as you may or may not know, the City of Paducah, one of those which will be competing for the AVLIS technology, has appointed a team of local officials to monitor development of the AVLIS technology and to coordinate their efforts to bring the AVLIS plant to that city. Recently the city hired a full-time director for the team and opened an office to better focus the efforts.

The AVLIS site qualification criteria were recently released for public comment. In your opinion, what would be the appropriate action for committees like the one that we have in Paducah to take, now that the site criteria are available?

Mr. MOORE. Sir, that is hard for me to answer. I think that we are on schedule in terms of our AVLIS program and our site selection. We have the luxury now of having at least two sites that are very aggressively wanting the AVLIS program, Paducah and Portsmouth. The Admiral has been to both.

The report I get back from him is the fact that while there are those people that are worried about nuclear power or worried about AVLIS, or worried about uranium enrichment, the people who live in the area sure are not worried about it. They think it is a very sound enterprise, a very sound way to make a living, a very important enterprise for the future of the country and for our energy independence.

And so, certainly the people who ought to know most about this or be the most concerned are not concerned at all.

There is a third potential site, that of Oak Ridge, Tennessee, that has an inactive plant now. At this point, we cannot really give any advice except it is helpful for the Department of Energy to know that the local areas are willing to consider a long-term cooperative relationship with the uranium enrichment enterprise, which an AVLIS deployment would mean.

And so I think the more we hear from the citizens in these areas that they are interested in that, it certainly will help the site selection committee. Because we do not want to build this in downtown Detroit where people are going to get upset. We want to build it in a place where people want it to be, and understand it. And we have a luxury, right now of three sites that want it very much, and two that we have been to already.

Senator MCCONNELL. Well, I had asked the Secretary to come to Paducah, and I think clearly the folks in that area are anxious to land this technology. And I guess what I was groping for, Mr. Secretary, is some advice about sort of where they go from here with their team.

With regard to the Smith Barney analysis, do you anticipate any changes in the schedule for AVLIS deployment as a result of this report?

Mr. MOORE. No, we do not. We take it as a challenge to try to live up to the schedule we have. We believe we are fairly versed in nuclear matters and licensing. And we think we understand what

we are up against. And we believe our schedule is more accurate than the one that Smith Barney gives.

Smith Barney is looking at government as a whole and DOE as a whole, and I have got to admit, a government project and a DOE project never comes in as well as private enterprise could do and as timely as they could do. And I will yield to Senator Johnston's comment immediately on that score. And we would love to see the corporation created and have them assume the AVLIS responsibility. They could probably do a better job.

We have done our part, government has, really, in designing and testing this in the basic research stage at our Lawrence Livermore Laboratory. Now it is time to apply it and move it out. And I think private industry is always better at that than would be the government.

But, no, our schedule has not slipped. We are on schedule. We think we can hold to it, and we are sure going to try. And let me try to answer your question again.

I think that your citizens group in Paducah can be of help in the sense that they can certainly work with the Department of Energy to learn what it is that we are looking for to determine where the site ought to be, and to facilitate that information getting to the Department of Energy and be sure we have it, and that we have not overlooked something or missed something.

And I am certain from what I know about the folks down there that they will be very aggressive in doing that.

Senator MCCONNELL. That team is in place, and they are certainly going to be aggressive.

If we did not have enough threats to the uranium enrichment business, we of course have the Clean Air Bill as well.

Mr. MOORE. It has not helped.

Senator MCCONNELL. As you and I both know, Mr. Secretary, the House version would substantially increase the power costs for the uranium enrichment facilities. And we are all quite concerned about the further threat embodied by that legislation. Of course in the Senate version, the utilities supplying power to the uranium enrichment facilities were not required to scrub, and to meet the standard in the way least costly to those utilities and to that business.

I am wondering what you hear, and I know the conferees have not even met yet, about the possibility of the Senate version prevailing on the central question here, which could very much drive up the cost of uranium enrichment even further.

Mr. MOORE. Senator, we are not hearing anything yet. What we are hearing is that there is a concern about certain utility companies around the country, and they simply use a raid, if you will, on the three power companies where almost all of their business is supplying power to our two enrichment enterprises, as a way to gain some needed allowances of emissions to be able to solve their problem.

It was not a matter of them being mad at the uranium enrichment enterprise, it was a matter of they thought, well, here is a government source from which we can get some needed allowances. We think it is absolutely untenable that three power plants in the country would have, by far, the toughest emission standards of the

country, far tougher than that which we are willing to apply across the board to utility companies burning coal. And the only reason for it is they were just raiding them for emissions allowances. And we just do not think that is good law. And we have hopes that that could never survive a conference.

It is being punitive to three particular power plants which, in turn, will drive up our cost of operation. And as you have heard from Smith Barney, we just do not need that to be able to compete in a real competitive marketplace that we foresee. And so it really is a problem to us. And we would hope that the Senate will stand firm for its version. And we would hope that the House members would agree to that.

And we will certainly do everything we can to encourage those House members to see the wisdom of the Senate's decision.

Senator FORD. The other consumers, I might say, as a result of that, are going to be in thousands of homes and farms and so forth who are going to have to pay a higher rate because they are trying to get this. That probably will bring more weight to bear on it than what we are doing here.

Senator MCCONNELL. Well, in sum, the two biggest threats to the future of uranium enrichment, obviously, are the failure to pass this bill in the House and the wrong version of this section of the Clean Air Bill prevailing at conference. And I think we are all acutely aware of that, and we will be working with you, Mr. Secretary, in every way we can from this side of Capitol Hill to see to it that the right thing happens on both of those issues.

And I again want to commend you, Mr. Timbers, for the report. I think it is excellent. And I hope that it will produce the desired result on the House side.

Thank you, Secretary Moore.

Mr. MOORE. Thank you.

Senator FORD. Thank you, Senator McConnell.

I have just one other question, and maybe there are others by Senator McClure.

To get back to AVLIS just one minute, Mr. Secretary. A key feature of DOE's AVLIS plan is the selection of an industrial contractor for AVLIS. When does DOE plan to initiate its request for proposals? When will a contractor be selected? And after he is selected, will this contractor provide technical advice during the demonstration phase only, or will this contractor be the actual deployment contractor?

Mr. MOORE. The position now is that we have already named a source evaluation board. We did that on May 15th of this year. And it will help select which private contractor we would use. We intend to issue the final request for proposals in October of this year, to have companies come forward and give us their proposals for doing this. We intend to select the contractor in the March-April of 1991 time frame.

And so that is the process of actually getting a contractor on board to do this.

To answer your question, the contractor selected is going to be one that is going to actually move this from the laboratory stage into the deployment stage. And that contractor is going to be the same one to actually build it.

Senator FORD. Well, Mr. Timbers, do you think that AVLIS will be built without a corporation?

Mr. TIMBERS. I guess from our judgment it is hard to determine whether it will be built or not. I guess we feel that it is the single issue that is going to create a more competitive price for the UEE. At the same time, we think that it can be brought on at those kind of prices with a private corporation.

One of the key aspects of our recommendation is that it be brought on for economic reasons and economic reasons alone, that would be decided by a private or a government corporation. It is hard for me, frankly, to speculate now if political issues become involved in the decisionmaking process, as they did with other capacity additions to UEE, what would happen to it.

Senator FORD. I worry about Smith Barney's time frame. I have some problems with it being built. With the Department of Energy's time frame, I have some hope that it will be built. So I hope, beyond all other things, that it will be speeded up and that we can get into the——

Mr. TIMBERS. Senator, I would emphasize that Secretary Moore is correct in that our greatest concern about the AVLIS deployment and the construction time schedule and the costs surround the licensing process, and the environmental process as well. We feel that it will be a lengthy and contentious process, as has been experienced with other advanced nuclear facilities.

Right now, the whole process as to how it is to be regulated has not been decided. Now we believe that there are steps that can be taken to accelerate that process and to make it a firm and more reasonably achievable time schedule. But we clearly focused our concern in that area, and it is not the technology to it, and it is not in terms of the ability to move it from the work bench to the production site, but it is really the activities necessary to move it along in a regulatory scheme.

Senator FORD. Secretary Moore, the Smith Barney people have analyzed the effects of Soviet sales in the world market on the enrichment enterprise. And they recommend that DOE purchase Soviet SWUs in order to improve its position in the market. What position does DOE have as it relates to that?

Mr. MOORE. The Department of Energy has no fixed position on this, Mr. Chairman. This would have to be approved by the Congress, and the Congress would have to give us specific legislative authority to do that, because we are a government entity now, and not a private or a government corporation.

Secondly, this would have to be approved by the Administration, which requires the input of more than the Department of Energy. And therefore it has to be before an interagency process. It is currently before them. They are in the study stage of it now. And so I would say that this is a very beginning or conceptual analysis of that idea. But there is no fixed or firm position, and we are not now asking this Congress to do anything in terms of giving us legislative authority.

Senator FORD. All right.

What you are saying is that the focus should be restructuring and not purchasing Russian SWUs. That is coming later.

Mr. MOORE. We have got to do first things first. We have got to get this legislation through. That is what we are spending our time on. And we are simply looking at this other thing as a concept that we are taking a look at.

Senator FORD. Fine.

Some say that this will not work. And they are many of the same people who said that Conrail would not work. And so I think we are on the right track.

Senator McClure, do you have anything you wanted to add?

Senator MCCLURE. Mr. Chairman, there is just one point I wish to make. I will have some questions to submit for the record.

Senator FORD. Other Senators may also have some written questions, and I will hope that you will respond in a timely fashion.

Senator MCCLURE. Mr. Chairman, particularly in view of this last discussion we have had with respect to AVLIS, I want to make clear in my mind a conclusion which I have already reached. And I want to know whether you share it or not.

Mr. Secretary, a moment ago, with respect to the possible purchase of Soviet supplies, you indicated, well, first things first, let us get this appropriation on track and get this legislation passed. Is that statement also true with respect to the development and deployment of AVLIS, that first things are first, and the first thing is to get the current enterprise straightened around, and secondly to talk about AVLIS?

Mr. MOORE. Well, I would say yes, but a less complete yes than in answer to the Chairman's question. It is really a parallel track. Certainly, we have to, in any event, and first things first, get this thing into a government corporation, as it is possible it could operate, even with current technology. It is possible it could operate without AVLIS. We do not think it will operate as well, from what we know now, but the important thing is to get it into a government corporation. And then, while we are doing that, let us move on with the science and technology and the application of AVLIS technology.

Senator MCCLURE. Mr. Secretary, my conviction is that what you said is possible. I believe that to be true, at least until current plant and equipment is worn out and has to be replaced. Because if you look at the sunk cost question and say that is an irrelevancy with respect to our current status, whatever the argument maybe, we have got to get beyond that.

And I believe the Smith Barney/Coopers & Lybrand study indicates that we have already over-repaid the capital. If that is a fact, let us recognize it and move onward with making this a viable, competitive international competitor.

And if that is true and we can do that, and say there is no more cost to be recovered, and you make your pricing on that basis, and you must be structured so you can operate in a competitive market, with those changes, you can operate in a competitive market with existing technology.

Now I support AVLIS for a couple of other reasons. One is that at some time you are going to have to replace plant because plants do wear out. And it makes sense to replace plant with better, improved, more modern, more efficient technology. So I support AVLIS from the standpoint that it is the next replacement.

Secondly, I support AVLIS because it is energy-efficient. And I hope we have not forgotten that that is part of our national goal to develop energy efficiency. The current technologies that we use are massive consumers of electrical energy, I repeat, massive consumers.

And I think there is a time in the not-to-distant future when economic growth in the country will find an economic use for that electricity that is far better than continuing to pour it into the enrichment enterprise. And not because it is not efficient to use it there, but because it is more efficient to use it somewhere else, and to replace it with a less energy-intensive technology.

So I support AVLIS on its own.

If I understand both of you, and I want to sharpen my focus on this for just a moment, Mr. Timbers, I believe you are saying to us that AVLIS has to stand on its own as an economic decision, but it will have assistance if it is developed by this corporation because the corporation has a positive cash flow, and that cash flow can be invested in the future technology.

Is that correct?

Mr. TIMBERS. We think the enterprise will have the capability to do that.

Senator MCCLURE. And it is a stronger capability than just keeping the current facilities running and having some totally independent group building AVLIS?

Mr. TIMBERS. We think so, yes.

Senator MCCLURE. Because there is the strength of its current market position, the strength of its current contracts, the ability to continue those contracts, particularly if you get into a less costly form of production. I think I understand what you are trying to tell us, and I believe it is probably correct. AVLIS would just be a stronger economic competitor in the framework of the existing structure of production.

Mr. TIMBERS. Senator, we believe that by restructuring the UEE it can be a successful combatant in that battle that I described in 1995. As a successful combatant, it will have more resources and more capability to be able to afford the development and deployment of AVLIS.

Senator MCCLURE. Thank you very much.

Thank you, Mr. Chairman.

Senator FORD. Let me just say to Secretary Moore, then, I want to encourage DOE to demonstrate AVLIS by 1992, which I think is your plan. And if we can adhere to that schedule, I think, once demonstrated, the business decision will be a whole lot easier to be made. And so that would supplement the position we have as it relates to going ahead.

There will be some written questions for both of you. And I hope, as I said earlier, that you respond in a timely fashion. I appreciate your patience and they will call all four of us the iron buckets before we get through with this.

The hearing is adjourned.

[Whereupon, at 11:45 a.m., the hearing was adjourned.]

APPENDIX

Responses to Additional Questions

DEPARTMENT OF ENERGY,
Washington, DC, July 24, 1990.

Hon. WENDELL H. FORD,
Chairman, Subcommittee on Energy Research and Development, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: On June 28, 1990, W. Henson Moore, Deputy Secretary of Energy, gave testimony before your subcommittee on the Department of Energy's uranium enrichment program, specifically the recently completed report prepared by Smith Barney, Harris Upham and Company, Incorporated.

Following that hearing, you submitted written questions for our response to supplement the record. Enclosed are the answers to those questions.

If you have any questions, please have your staff call Barbara Barnes on 586-8687. She will be happy to assist you.

Sincerely,

JACQUELINE KNOX BROWN,
Assistant Secretary, Congressional and Intergovernmental Affairs.

[Enclosure]

QUESTIONS FROM CHAIRMAN FORD

SMITH BARNEY REPORT

Question 1. Do you agree with Smith Barney's assessment of what happens to the enrichment enterprise if it is not restructured?

Answer. Smith Barney made the following observation: "If the Uranium Enrichment Enterprise (UEE) cannot effectively respond to an increasingly competitive marketplace, its decreasing market share will produce diminished revenues. Consequently, there will be fewer commercial customers, together with the need for the Government to carry the financial burden of the enormous sunk investments."

DOE shares this view. DOE believes, with Smith Barney, that the best means of ensuring that the uranium enrichment enterprise can effectively compete and provide maximum value to the Treasury is to establish a Government Enrichment Corporation.

MARKET SHARE

Question 2. How would you advise the uranium enrichment enterprise to position itself in order to compete successfully in the marketplace of the future?

Answer. The Administration recommends that a Government Enrichment Corporation be established as the best means to successfully compete in the marketplace of the future. The Administration's legislative proposal (H.R. 2480) and the Senate bill (S. 83) would create such a corporation with commercial flexibilities that Government agencies lack and that are essential for its future competitiveness. These flexibilities include the ability to respond quickly to market needs through effective contracting and pricing practices, the authority to apply revenues based on prudent commercial decisions, and a management structure that can act promptly and authoritatively regarding investment alternatives.

UNRECOVERED COSTS

Question 3. Smith Barney notes that efforts to recover "unrecovered Government costs in the context of a corporation are misdirected and ill-conceived in the context

of historical objectives and future business requirements." They continue: "A requirement to recover these costs would merely serve to create a debt burden and contingent liabilities that will make ongoing enrichment operations infeasible, whether under their current structure or restructured within or outside the Government." Does DOE agree with this assessment?

Answer. DOE agrees that efforts to establish a debt burden for the purpose of generating a return on unrecovered costs are misdirected and ill-conceived. DOE agrees with the Smith Barney conclusion that a Government Enrichment Corporation should be established in a manner that will permit the corporation to be successful. Therefore, DOE believes, as does Smith Barney, that creating a Government Enrichment Corporation with commercial flexibilities that will allow it to successfully compete and be financially healthy will provide the maximum value to the taxpayer. The net result is that the taxpayers would get a greater return from the eventual sale of the enterprise and/or from dividend payments made by the Government Enrichment Corporation back to the Treasury than would be the case under its current structure or by assigning a debt to the Corporation. The terms of any sale of the enterprise would be approved by the U.S. Government, which would assure that the return to the taxpayers was equitable.

URANIUM ENRICHMENT DEBT

Question 4. S. 83 and the Administration uranium enrichment bills both suggest an initial debt for the corporation of $364 million. These figures were based upon data calculated at the end of FY 1986. Since then, however, there has been a surplus of revenues over appropriations. Using the same method that was used to come up with $364 million, what would the figure be at the end of FY 1989?

Answer. The Administration's proposed legislation and the bill that passed the Senate (S. 83) both had an initial debt of $364 million based on the net cash flow as of September 30, 1986. The uranium enrichment enterprise has generated profits since that time. Using the same method that was used to derive the $364 million figure, the number as of September 30, 1989 is a positive figure or surplus of $389 million.

Question 5. Do you believe Smith Barney's assessment of how much is likely to be returned to the Treasury if the program is restructured? If not, what is DOE's guess? How does this compare with the amount that would be going back to the Treasury if the enterprise is not restructured?

Answer. As stated before the Senate Energy Research and Development Subcommittee on June 28, 1990, Smith Barney projects that an enrichment program that is restructured in the form of a Government Enrichment Corporation with its recommended provisions would be able to provide through the Year 2005 almost $10.5 billion or nearly $4.5 billion more to the U.S. Treasury than would a Government program operating under status quo conditions.

DOE has also evaluated the benefits of establishing a Government Enrichment Corporation according to the provisions in the Administration's proposed legislation. DOE has concluded that through the Year 2005 about $5.6 billion, or nearly $2.0 billion more could be returned to the Treasury than if the uranium enrichment enterprise continued to operate as a Government program.

The key distinction between the assessments by Smith Barney and DOE is that Smith Barney would not assign liabilities to the Government Enrichment Corporation that DOE would assign. The liabilities that Smith Barney would not assign involve future demand payments to TVA and environmental costs associated with the commercial share of past enrichment operations. These liabilities represent nearly $2.7 billion in costs that would reduce the available cash flow of the Corporation as proposed by Smith Barney. Therefore, the primary difference between the assessments of Smith Barney and DOE regarding the profitability of a Government Enrichment Corporation and the enterprise program is related to the issue of how liabilities are treated in forming the corporation. The net conclusion by both Smith Barney and DOE is that establishing a uranium enrichment corporation will maximize the value of this business and provide the greatest return to the Treasury.

UNRECOVERED COSTS

Question 6. DOE carries a number on its financial records of approximately $3 billion. What is this number? What is it used for? Is it a "debt"?

To what extent does DOE's $3 billion in unrecovered costs include charges for DOE's defense customers—for example, is interest included?

Answer. The FY 1989 Uranium Enrichment Financial Statements report an unrecovered Government investment of $2.96 billion. This amount is not a "debt," but

rather it represents the unrecovered investment the Government has made in enrichment plant and equipment and inventories. Investments are necessary for any ongoing viable industry, including uranium enrichment. Under current law, DOE is required to recover the cost of these investments, in the form of depreciation, inventory and interest costs, as well as all operating costs in enrichment prices that are charged to our customers.

The price that is applied to defense customers for providing enrichment services includes only budget costs and does not include depreciation or interest costs that are included in the $2.96 billion of unrecovered costs.

AVLIS DEPLOYMENT

Question 7. Smith Barney expects a five year slippage in plans for deployment of AVLIS. You don't agree with their assessment. Why?

Answer. The judgment of Smith Barney's AVLIS panel was based on past experience of institutional problems with major DOE projects. DOE has allowed more than 2 years in our schedule for NRC licensing and preparation of environmental documentation, based on consultations with experts in the field and in recognition of the fact that the hazards associated with enrichment facilities are significantly less than those for nuclear power plants. Thus, the Department thinks that the Smith Barney conclusion that AVLIS deployment could be delayed by 5 years is overly pessimistic, and believes that AVLIS has the potential for enhancing its competitive position beginning in the late 1990s rather than in the post-2000 timeframe, as Smith Barney concludes.

Question 8. Will restructuring help speed up the development and ultimate deployment of AVLIS? Why or why not?

Answer. Smith Barney found that the technical development program to demonstrate and deploy AVLIS is reasonable. They further expressed the view that decisions concerning the future use of this technology would be more appropriately made by the Government Enrichment Corporation, since they would be based primarily on commercial considerations rather than on political factors.

The Department agrees with Smith Barney that AVLIS deployment decisions should be made by the corporation. Whether this would result in an accelerated or a slower, more deliberate deployment schedule is uncertain. However, we believe that, if technology demonstration confirms that AVLIS technical and economic advantages are sound, and market needs so dictate, prompt deployment will more likely be made by the corporation on a timely and responsive basis.

Question 9. What do you believe to be the greatest challenge with respect to bringing AVLIS to the marketplace?

Answer. We believe that the most significant challenge with respect to bringing AVLIS to the marketplace is institutional in nature. Preparation of the required environmental documentation and completion of the NRC licensing process represent a demanding task in terms of the institutional requirements to bring AVLIS to the marketplace. However, we believe the schedule to accomplish these tasks is both realistic and achievable.

DOE has already taken a number of positive steps to ensure a timely transition of the AVLIS technology from the laboratory into the marketplace. These include actions to complete technology demonstration in 1992. These also include the integration of industrial expertise into the AVLIS program starting in 1990 and continuing on an increasing basis through the completion of technology demonstration so that this transition to commercial application can be most effectively accomplished.

DECONTAMINATION AND DECOMMISSIONING

Question 10. Smith Barney has recommended that estimates for decontamination and decommissioning contain a great deal of uncertainty since no project like the one proposed has ever been attempted before. Smith Barney also recommends a comprehensive evaluation of D&D costs be undertaken. What is your response to their recommendations?

Answer. We agree that a comprehensive evaluation of D&D costs should be undertaken. The Office of Nuclear Energy will work with the Office of Environmental Restoration and Waste Management to conduct a more thorough evaluation than has been completed in the past. Because of the magnitude of the work required, the unique nature of the future D&D activities involved in DOE's enrichment plants, and the still emerging technologies that could be applied for this D&D work, we do not expect that this study will be completed until September 1991.

URANIUM ENRICHMENT LIABILITIES

Question 11. Smith Barney recommends that liabilities incurred prior to formation of a Government corporation should remain with the Government. What is DOE's view on that subject?

Answer. Smith Barney proposes that the corporation should only assume liabilities associated with activities following its creation in order to provide the business with maximum flexibility and profit making potential. By creating a corporation with the ability to be highly competitive, Smith Barney concludes that substantial returns to the Government can be generated. These payments can be applied by the Government toward any past liabilities and investment in the enrichment program.

Smith Barney has excluded liabilities that would be assigned by DOE to the Government enrichment corporation in the Administration's proposed legislation. The liabilities that were excluded by Smith Barney include future demand payments to TVA and environmental costs associated with the commercial sector's share of past enrichment operations.

CLEAN AIR LEGISLATION

Question 12. How will the pending House and Senate clean air bills affect the competitiveness and the profitability of the Uranium Enrichment Program?

Answer. It is expected that the acid rain provisions in the Clean Air legislation will significantly increase the cost of power purchased to operate the gaseous diffusion plants. To the extent that these costs cannot be offset by other cost reductions, this will diminish the competiveness and profitability of the uranium enrichment program.

Specifically, this legislation will have a direct impact on the two utilities that supply 70 to 80 percent of the electric power used by the gaseous diffusion plants. Electric Energy, Inc. (EEInc) owns and operates the Joppa coal-fired power plant that supplies power to the Paducah Gaseous Diffusion Plant. The Ohio Valley Electric Corp. (OVEC) owns and operates two coal-fired plants called Kyger Creek and Clifty Creek that supply power to the Portsmouth Gaseous Diffusion Plant.

We estimate that the House Bill will increase the power cost by about $20 per SWU starting in 1996 in order to meet sulfur dioxide emission limits. This $20 per SWU increase will take place starting in 1996, as compared to the Senate Bill which is estimated to result in an $11 per SWU cost increase in the mid-1990s and a $20 per SWU increase by the year 2000.

The House Bill requires a sulfur dioxide emission limit of 0.4 pounds per million BTU by January 1, 1996, as compared to the Senate Bill which requires meeting sulfur dioxide emission limits of 2.5 and 1.2 pounds per million BTU by 1997 and 2000, respectively. We estimate the House Bill will increase our costs, as compared to the Senate Bill, by about $600 million over the 1996 to 2000 time period. An additional $200 million will also be incurred over the 2001 to 2005 timeframe associated with the higher operating costs incurred to meet the lower (0.4 pounds per million BTU versus 1.2 pounds per million BTU) sulfur dioxide emission limit in the House bill.

Questions From Senator McClure

SMITH BARNEY REPORT

Question 1(a). The Smith Barney Study recommends restructuring of the uranium enrichment enterprise but finds that one-step privatization is not feasible at the present time for a number of reasons, notably the enterprise's unknown contingent liabilities, its lack of identity within capital markets and the present uncertainties in the spot market sales of SWU's.

Do you agree with this assessment?

Answer. DOE shares the view that one-step privatization of the uranium enrichment enterprise is not feasible at this time. The legislation proposed by the Administration that would establish a Government Enrichment Corporation for uranium enrichment reflects this position.

URANIUM ENRICHMENT CORPORATION

Question 1(b). Do you agree that the first step should be transfer of the enterprise to a newly-created Government corporation as in S. 83?

Answer. DOE agrees that the first and most constructive step to create a competitive, financially healthy uranium enrichment business in the United States would

be to transfer the existing enterprise to a newly-created Government enrichment corporation as in S. 83 and the Administration's proposed legislation, H.R. 2480.

UNRECOVERED COSTS

Question 2(a). Smith Barney, with the assistance of Coopers & Lybrand, evaluated the effect on unrecovered costs of certain decisions by previous Administration to write-off certain policy costs such as excess capacity and associated imputed interest charges. Using their accounting treatment of these policy decisions, rather than DOE's existing pricing formula, Smith Barney believes that there is no unrecovered cost and, in fact, there has been an over recovery of $1.17 billion, rather than the shortfall currently assumed in the pricing of enrichment services.

From DOE's perspective, do you believe their evaluation of these so-called unrecovered costs is realistic?

Answer. In their May 15 report, Smith Barney estimated the uranium enrichment enterprise's unrecovered cost as of September 30, 1989, at $4.5 billion, without including what Smith Barney describes as Government policy costs (referred to as "writeoffs" by DOE) such as excess capacity, Tennessee Valley Authority demand payments for power not taken, and associated imputed interest charges. DOE's figure of $3 billion includes write-offs of some of these policy costs. Table 1 highlights the treatment of unrecovered costs. Smith Barney initially declined to take a position on how these Government policy costs should be handled. In response to requests by members of Congress and the Department, Smith Barney provided additional analysis on June 15, that factored in these policy costs. Based on available precedents, Smith Barney concluded that it would be appropriate to write off nearly $5.7 billion, or 50 percent of Government policy costs. Therefore, they stated that they "believe there is no unrecovered cost, and, in fact, there has been an over-recovery of $1.17 billion."

DOE has taken a different approach in arriving at our figure of $3 billion of unrecovered cost. Under DOE's calculation, the Treasury would get full return on its investment if it ultimately received $3 billion from the eventual sale of this enterprise and/or from dividend payments. Smith Barney concludes the Treasury has already received in excess of its investment by $1.17 billion.

Table 1.—UNRECOVERED COSTS

[Costs in billions of dollars]

	DOE	Smith Barney
Initial 1969 Value	$1.5	$1.5
Increases:		
Interest	5.9	[1] 7.5
Subtotal	7.4	9.0
Decreases:		
Surplus Cash Flow	−0.3	−0.3
Cost Adjustments	0.0	[2] −4.2
Write-Offs of Policy Costs	[3] −4.1	[3] −5.7
Total Decreases	−4.4	−10.2
Sept 30, 1989 Value	$3.0	($1.2)

[1] Smith Barney added interest costs relating to DOE's write-off of $4.1 B.

[2] Smith Barney reduced DOE's production cost that should have been applied to Defense customers ($1.10), carrying costs for uranium inventories ($1.50), costs of uranium applied to overfeed the enrichment plants ($0.60), interest based on fixed versus variable rates ($0.90), and other miscellaneous items ($0.10).

[3] DOE wrote off Policy Costs for GCEP ($2.90) and excess GDP capacity ($1.2B).
Smith Barney wrote off $5.70 or 50% of the following Policy Costs:
(1) GCEP—$2.90
(2) Excess GDP capacity—$1.20
(3) TVA payments—$2.60
(4) Associated interest on the above 3 items—$4.7B
Total—$11.4B

Question 2(b). Could the Administration change the current assumptions regarding unrecovered costs to reflect the Smith Barney/Coopers & Lybrand accounting

treatment of these costs in the pricing of DOE enrichment services without legislation?

Answer. The Administration's current assumptions regarding unrecovered costs are consistent with existing legislation. To make a few of the changes that would reflect the Smith Barney/Coopers & Lybrand accounting treatment of these costs may require a change in the enrichment services criteria. The criteria are considered a "rule", and any change would be subject to the provisions of the Administrative Procedure Act. Further, the Atomic Energy Act requires that any change in the enrichment criteria be submitted to Congress for a 45 day period prior to becoming effective.

The treatment of unrecovered costs is only part of a larger question of how to ensure that the existing uranium enrichment enterprise can effectively compete and optimize its value by providing a maximum return to the taxpayer. This issue can best be addressed by creating a Government Enrichment Corporation, which requires legislative action by Congress.

AVLIS

Question 3(a). DOE's uranium enrichment enterprise has an immediate financial problem that must be addressed if it is to survive as a commercial supplier of enrichment services. In my judgment, whether the enterprise survives the 1990's is unlikely to be influenced by the deployment of AVLIS.

What, if any, effect would AVLIS have on the enterprise's immediate financial problems?

Answer. We believe that the deployment of an economically sound AVLIS plant could have a positive influence on the enterprise from both an immediate and long term perspective. Since the AVLIS technology would not be deployed and operational until 1997 at the earliest, direct financial benefits of low cost production from an AVLIS plant will not resolve the immediate financial problems of the uranium enrichment enterprise. However, we believe that there could be immediate marketing benefits from a decision to deploy an economically sound AVLIS plant. We believe that customer reaction to such a decision would be very positive, helping to bolster our near term market share position and prevent any further erosion of market share.

AVLIS DEPLOYMENT

Question 3(b). If DOE enrichment services are currently non-competitive, what options does the enterprise have available for funding AVLIS deployment?

Answer. Currently, funding for AVLIS deployment can only be obtained by appropriations generated through the Federal budget process. Under restructuring, a Government Enrichment Corporation with access to money markets would have other options such as bank borrowing or debt or equity securities.

This is one of the primary reasons for the Smith Barney recommendation that the AVLIS deployment decisions be made by the Government Enrichment Corporation. In addition to having access to a broader source of funds, private sector financial investment criteria would be applied to the decision.

SOVIETS UNION EXPORTS

Question 4(a). Recently, there have been reports that the Soviet Union intends to increase its export of enrichment services on the spot market. Their stated objective is to sell 3 to 5 million separative work units annually from excess production capacity to generate hard currency as part of their effort to revitalize their economy.

What is your judgment of the adequacy of existing Soviet stocks to support these anticipated spot market sales, or will these sales have to be produced to satisfy the anticipated spot market sales?

Answer. The Soviets have indicated that they have both sizable inventories and excess production capacity. They appear confident of their ability to supply 3 to 5 million separative work units to the world market annually. We have no reason to believe otherwise.

Question 4(b). In your judgment, do the Soviets intend to sell these enrichment services below their production cost? What is our experience in this regard? Do we know their production costs?

Answer. The Soviets appear to be driven more by the need to generate hard currency than to recover production costs. We do not have specific information about their production costs. However, based on our knowledge of the enrichment processes they use (centrifuge and gaseous diffusion), we believe that a strong case can be

made that the prices associated with sales of Soviet enrichment services are less than the cost of production from these processes.

ENRICHED URANIUM PRICES

Question 5. During testimony before the Interior Appropriations Subcommittee earlier this month, Secretary Watkins assured me that key members of the Congress would be fully consulted before the Administration attempted to undertake any purchases of enriched uranium.

What would be the effect of such purchases on the price charged for defense enrichment services?

Answer. The Department would purchase enrichment services only to the extent that such purchases could be made at prices which are less than the Department's cost of production. Such purchases would therefore reduce enrichment costs in total. The result is that these improved economics could be used to reduce prices to both defense and commercial customers or for application toward other production, environmental or AVLIS costs in ways that could also benefit enrichment customers.

CONTRACT CANCELLATIONS

Question 6(a). You indicate that two of DOE's largest customers—TVA and Commonwealth Edison—are examining alternative enrichment sources. Others are examining the economic feasibility of terminating existing contractual commitments with DOE.

What are you doing to discourage the possibility of such contract terminations?

Answer. We have informed these and other customers about the aggressive cost control measures being taken at the gaseous diffusion plants to maximize the use of inexpensive, off-peak and non-firm power, in order to ensure that prices can be provided at competitive levels. We are also emphasizing and visibly carrying out our commitment to complete the AVLIS technology demonstration to assure that the lowest cost enrichment supply can be made available as quickly as possible.

We believe that the most comprehensive and long-term solution to ensure that the uranium enrichment enterprise is competitive involves the establishment of a commercially oriented Government Enrichment Corporation. Our customers have been made aware that the Administration continues to support restructuring legislation to accomplish this and that efforts are being made to encourage the House to take action and follow suit with the Senate in order to enact this legislation. With the successful implementation of each of these actions, we believe that our enrichment customers will not terminate their contracts, but will obtain their enrichment services from the uranium enrichment enterprise in the future.

COST REDUCTION ACTIVITIES

Question 6(b). What specific cost reduction activities have you instituted?

Answer. Cost reduction is a major, ongoing goal for the uranium enrichment enterprise that requires diligent and aggressive attention. At the same time, and as part of our cost reduction effort, we are striving to ensure that operational excellence is maintained in every facet of the uranium enrichment program.

Achieving operational excellence will involve conduct of operations in accordance with INPO Guidelines, and the establishment of permanent management systems that will maintain high levels of performance by institutionalizing processes associated with continuous striving for excellence.

With regard to controlling costs, we have set an ambitious cost reduction target of 20 percent by the post-1995 timeframe. Reducing our costs by 20 percent from now to 1995 is a demanding objective. Specific activities that have been instituted to accompl.sh this include efforts to minimize power costs by increasing our ability to purchase lower cost, nonfirm power. Over the next several years, we will continue to install equipment that will allow us to purchase up to 30 percent of our total power on a nonfirm basis, resulting in cost savings of about $200 million each year. Also, production equipment will be removed from the closed plant at Oak Ridge and installed in the two operating plants at Paducah and Portsmouth to replace less efficient equipment. This is expected to result in lower production costs at Paducah and Portsmouth. Finally, a review of operating costs and manpower utilization has been initiated with the objective of identifying how a 10 percent improvement in nonpower production cost can be achieved.

POWER COST REDUCTIONS

Question 6(c). What have you done to reduce your power costs?

Answer. We have developed, and implemented, a strategy for minimizing power costs and reducing the potential liabilities associated with long-term, firm power contracts by utilizing significant amounts of lower cost, nonfirm power.

We will utilize the firm power under contract with Electric Energy, Inc. and the Ohio Valley Electric Corporation to produce about 10 million SWUs per year. Our remaining production requirement of 2 to 4 million SWUs per year will be met by purchasing nonfirm power, mainly at the Paducah gaseous diffusion plant. Nonfirm power is bought on the spot market and is scheduled on an hourly, daily, weekly, monthly, or seasonal schedule. Our experience to date in FY 1990 has been outstanding with over $100 million in reduced power costs expected this year. We intend to install additional equipment at our plants to further increase our ability to purchase nonfirm power to the point where lower cost, nonfirm power purchase will represent about 30 percent of our total power purchases.

SMITH BARNEY, HARRIS UPHAM & CO., INC.,
New York, NY, July 19, 1990.

Hon. WENDELL H. FORD,
Chairman, Subcommittee on Energy and Development, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR SENATOR: I am enclosing answers to the follow-up questions from you and Senator McClure found in your letter of June 29, 1990.

Please do not hesitate to contact me if I can be of further assistance regarding the Uranium Enrichment Enterprise.

Best regards,

WILLIAM H. TIMBERS, JR.,
Managing Director.

[Enclosure]

QUESTIONS FOR SMITH BARNEY

Question 1. Last year Secretary Watkins indicated that he considered enactment of this legislation to restructure the DOE's uranium enrichment enterprise a priority to assure the enterprise's future economic viability.

(a). Do you agree with this statement?

(b). How critical is the timing of enactment of such legislation to the future of the enterprise? For example, does it need to be enacted in this Congress?

Answer. Yes, we believe that legislation to restructure the DOE's uranium enrichment enterprise (the "UEE") should be a priority. Although the UEE has maintained operating profitability in an increasing competitive world market, where product price has become the dominant criterion for supplier selection decisions, the UEE's current and near-term profitability is based on long-term contract prices that cannot be sustained when lower-priced, short-term purchases begin to dominate the market in the mid-1990's.

Although the UEE is expected to be cost-competitive, the UEE is ill-equipped in many important aspects for this new price-driven market environment. Success in the future will require operating efficiencies, responsiveness to customer needs and pricing flexibility. Because of the UEE's current structure, lengthy decision-making process and prohibition against price discrimination, the UEE does not have the operating efficiencies and flexibility needed to compete in the future. It will take some time to implement these changes and realize the benefits of restructuring. However, if the United States is to be competitive in the mid-1990's, now is the time to effect these changes.

Question 2. Your study recommends privatization of the uranium enrichment enterprise but finds that one-step privatization is not feasible at the present time for a number of reasons, notably the enterprise's unknown contingent liabilities, its lack of identity within capital markets and the present uncertainties in the spot market sales of SWUs.

Can DOE address any of these concerns without legislation?

Answer. In order to achieve a smooth and successful transition to a true business enterprise, the "new" UEE's structure, authority and regulatory constraints, among other items, must be defined clearly and unequivocally. At present, and without legislation, the DOE cannot address most of these issues successfully due to: (i) lack of authority to do so and (ii) undue influence from the traditional political environment that has affected the operations of the UEE.

However, the DOE could streamline its decision making process, continue working on certain cost reduction programs, and initiate studies to determine more accurate-

ly the amount of some of the contamination at the UEE's facilities without any additional legislation.

Question 3(a). Under current policies governing the pricing of enrichment services which reflect certain assumptions regarding unrecovered costs, in your judgment, can DOE's uranium enrichment enterprise remain competitive?

Answer. The Project Team believes that for the UEE to be successful, i.e., both competitive and providing maximum value to the Treasury, it will have to change both its pricing strategy and the terms it offers to customers. As the spot market for SWU continues to develop, customers have less of a desire to continue with existing long term contracts. The current market environment is one where customers are aggressively seeking lower priced SWU and more flexible terms from suppliers. If the UEE cannot accommodate these customer needs, it runs the risk of losing more market share and, resultantly, profits.

In order to compete successfully in the future, the UEE will have to operate outside of the confines of Section 161(v) of the Atomic Energy Act and the USEC. The requirements imposed by this law are not appropriate for a business-oriented entity that is subject to a constantly evolving marketplace. Specifically, the UEE must become more flexible in its pricing, be allowed to discriminate among customers, where appropriate, and its pricing decision making process must be uninhibited by Congressional and legislative oversight and interference. Furthermore, the Project Team's work shows that there are no unrecovered costs.

Question 3(b). Are there any options available to DOE other than enactment of legislation similar to S. 83?

Answer. We believe that there are a series of steps which could be taken to improve the UEE without enacting legislation similar to S. 83. First, the DOE could streamline the management decision making process and organizational structure of the UEE. Second, Congressional action to exempt the UEE from the restrictions and requirements of Section 161(v) of the Atomic Energy Act could be obtained and, thus, grant the UEE much needed flexibility in pricing to its customers. Third, a cost-cutting program can be designed and implemented to avoid redundancies and redirect resources to areas where efficiency may be improved. Lastly, implement procedures and guidelines that direct the future programs and operations of the UEE on the basis of economic considerations and insulate the UEE to the greatest extent possible from the historically detrimental political and policy objectives which conflict with efforts to provide economic and reliable enrichment services.

Question 3(c). If DOE were to lose its long-term commercial customers, what alternatives would be available to it to meet the Federal Government's defense needs? What would be the effect on the costs of defense enrichment services?

Answer. National security considerations dictate that enriched uranium requirements for defense needs, as well as some portion of the commercial nuclear power market should he served by domestic suppliers. This goal becomes especially significant in the context of a national energy policy which seeks to maintain access to the nuclear option as a future source of energy supply, either through modifications in existing nuclear power technology or introduction of a new generation of advanced reactors. Furthermore, if the UEE cannot effectively respond to an increasing competitive marketplace, its decreasing market share will produce diminished revenues. Consequently, without commercial customers, the Government would carry the financial burden of the enormous sunk investments, pay for all operating and fixed costs, and fund all costs associated with decontamination and decommissioning and other costs of compliance with environmental regulatory requirements.

Our report did not specifically address the cost of defense enrichment services without a base of commercial customers. However, we project that, in 1996, commercial customers will account for approximately 93 percent of UEE revenues. Therefore, without this substantial base of revenues, the cost of defense enrichment services will he extraordinarily high.

Question 4(a). DOE's uranium enrichment enterprise has an immediate financial problem that must be addressed if it is to survive as a commercial supplier of enrichment services. In my judgment, whether the enterprise survives the 199Os is unlikely to be influenced by the deployment of AVLIS.

What, if any, effect would AVLIS have on the enterprise's immediate financial problems?

Answer. While AVLIS is on the developmental stages, all research and development costs will be covered by the UEE. However, although this initial investment adds to the UEE's immediate financial burden, the expected benefits from AVLIS deployment will improve the competitive position of the UEE as well as its future financial viability. DOE estimates that an additional $674 million (in FY 91 dollars)

will be required to complete development and demonstration, with 70 percent of this amount to be spent between FY 1990 and FY 1992.

Question 4(b). If DOE enrichment services are currently non-competitive, what options does the existing enterprise have available for funding AVLIS deployment?

Answer. Given the current structure of the UEE, the only sources of funding available to finance the AVLIS deployment are direct Government funding and the UEE's internal funds which may be available if a more flexible, customer oriented pricing strategy is adopted.

Questions From Senator Ford

Question 1. Congress must ensure that taxpayers receive the "biggest bang for their buck" from their investment in the enrichment program. How might that best be done?

Answer. The Federal Government has an enormous sunk investment in the UEE. This sunk investment includes prior direct capital expenditures, uranium inventories, research and development costs, together with significant contingent liabilities in the areas of environmental cleanup and decontamination and decommissioning costs. As outlined in our Report, most of these costs are fixed liabilities that must be paid regardless of whether the enterprise is restructured or even shut down. Thus, a value-maximizing strategy that seeks to deploy enrichment assets so as to yield the greatest return to the Government, with that income used to offset some of the obligations arising from prior operation would produce the optimal return to taxpayers' investment.

The Project Team believes that the best way to maximize the value of enrichment operations to the Treasury, and to achieve the other goals of the Assessment, is to establish a true business enterprise in the private sector. Fundamentally, a private entity would be the most viable form of business that could compete effectively in the global market. However, we believe that such an immediate transfer would be impractical due to many reasons as outlined in our Report. Furthermore, the sale of the UEE to the private sector at this time would result in significantly less than optimal value to the Treasury in terms of both the price received from the privatization sale and annual cash flow available for distribution to the United States Government.

As a result, the Project Team recommended, as a first step, the transfer of the UEE to a newly-created government corporation. The Project Team believes it is critical to establish this proposed government corporation in a manner that will permit it to operate in a business-like fashion. This necessitates that the government corporation, to the maximum extent possible, operate outside of the political and bureaucratic environment that has historically affected the business operations of the UEE. This can best be accomplished by forming the new government corporation with an organizational structure and other corporate attributes as close as possible to those of a private corporation. In addition, it is imperative that the corporation be free of those administrative and financial controls that constrain the operational efficiency and financial flexibility of a government agency.

Specifically, this restructured government corporation should:

—be wholly-owned by the Government and considered an instrumentality of the United States;

—establish a Board of Directors, management organization and incentives, and accounting principles that will encourage and support profitability prior to privatization;

—have the authority to establish prices for its commercial products, materials and services as it deems appropriate in order to maximize its profitability;

—be outside the annual appropriations process and Gramm-Rudman-Hollings sequestration control; and

—develop and begin to implement a capital market access strategy by having responsibility, to the extent possible, for all capital financing for system improvements, including the future expenditures for development and deployment of AVIS.

As a result, the restructured government coloration would be able to:

—provide a reliable, competitively priced supply of enriched uranium;

—operate for a reasonable period of time during which the barriers to privatization can be analyzed and, where possible, removed;

—establish a history of successful operating and financial performance, i.e., a track record, that will motivate private interests to pay the highest possible price in the event of the ultimate privatization of the UEE;

—determine capital funding decisions based on economic considerations rather than the political factors that have influenced capital spending decisions in the past; and

—conduct its affairs in a less politicized environment, so it can be managed in an efficient, business-like fashion.

The Project Team also believes that the AVLIS technology can be a significant factor affecting the government corporation's ability to compete in the emerging short-term/spot market. With the DOE's cost estimates, or those more conservative estimates by the Project Team, the deployment of AVLIS has the potential to produce significant savings in the UEE's cost of producing enriched uranium. As a result, the Project Team recommends that the development, deployment and licensing of AVLIS be accelerated, where possible. We further recommend that the future AVLIS research and development costs, and all capital costs required for the deployment of AVLIS, be borne by the restructured government corporation or its successor private corporation.

As a result, this strategy will not only maximize the UEE's annual cashflow which will result in significant cash distributions to cover existing liabilities, but in doing so will also enhance the value of the entity so as to maximize the price the Government will receive upon privatization.

Question 2. You have analyzed the effects of Soviet sales into the world market on the DOE Uranium Enrichment Enterprise. What are your conclusions?

Answer. Soviet SWU has been sold to Western countries since the early 1970s. In the last few years, nuclear fuel trading companies began offering Soviet SWU and enriched uranium product ("EUP") in the spot market. In addition, large excess utility inventories have recently been placed on the market. The result has been further erosion in the spot price to about $50 and the growing perception that large quantities of low price SWU are sufficiently available to allow customers to further reduce their reliance on long-term suppliers. This change in the market for SWU—from the historic market, driven predominantly by long-term contracts and in which price was largely dictated by the DOE to the current market where there is increasing reliance on the spot market that is supplied by the DOE's competitors—is due in large part to the Soviet supply and the trading of excess inventories of SWU.

The Soviet SWU supply represents a significant threat to the UEE's market share and prices. If a larger market share could be obtained, the Soviets are unlikely to be supply limited as they are believed to possess a very large inventory. The prices the Soviets are willing to accept are very low (lower than $60 per SWU for recent spot sales). The pricing of Soviet material is not driven by cost recovery or other conventional market principles but, rather, a desire for hard currency. Therefore, attempts by the UEE to compete on price would be fruitless and would likely result in a downward price spiral.

Although Soviet supply is unacceptable to some purchasers, there are a significant number of U.S. buyers willing to purchase Soviet SWU and the acceptability of such purchases is improving. The Soviets are developing a reputation as a reliable supplier. Moreover, the warming East-West political environment lessens the historic prejudice against Soviet SWU. In addition, nuclear fuel trading companies have swapped Soviet-origin SWU in Europe for more acceptable-origin SWU for ultimate sale in the U.S.

Since UEE cannot compete with the Soviets on price, the only effective defense is to purchase Soviet SWU and negotiate a reduction in additional Soviet sales. The price, quantity purchased, and limitation on additional Soviet sales should be negotiated. However, as long as the UEE pays no more than its average avoided costs for these SWU, this strategy would significantly improve the UEE's position.

Question 3. DOE has requested the authority to purchase SWU in the spot market if the price is less than the cost of producing the SWU themselves. Do you believe that this is a practical way to deal with the Soviet's competitive threat?

Answer. Purchasing SWU in the spot market would allow the UEE to (i) lower its production cost, thus increasing its profit margins, (ii) further reduce the supply of low-priced material, which is beneficial to the increase in demand for UEE product, and (iii) by being permitted to participate in the spot market, the DOE gains the capability of acting in the market to provide price support by buying and selling SWU.

The only effective strategy in dealing with the Soviet threat is to purchase Soviet SWU and negotiate a reduction in additional Soviet sales. The price, quantity and limitation on additional Soviet sales should be negotiated. This strategy will benefit the UEE as long as the price paid for Soviet SWU does not exceed the average avoided costs of the UEE. Also, it may still be beneficial for the UEE to purchase

above its average avoided costs if an increase in market price results from the transaction.

Question. What factors is your analysis based on?

Answer. Our analysis is based on two assumptions: (i) the Soviets are willing to sell SWU at a price lower than the UEE's price due to the Soviet need for hard currency and the economics of the Soviet system; and (ii) DOE is likely to be most affected by the Soviets, since DOE's customers have the most uncommitted demand in the future and are the most price sensitive.

Question. Customers are extremely price-sensitive today. Does your analysis consider whether or not DOE must lower its price and ensure that the Soviets are not undercutting DOE elsewhere in order to make the strategy a success in the market?

Answer. From now until 1996, the UEE supply is committed under contract so there is no benefit in reducing our price in the near term. Alter 1996, the question becomes: does the UEE lose market share (or customer loyalty) as DOE keeps prices high and the Soviets lower theirs? In a perfect world, the answer would probably be yes. However, our strategy is built upon recognition of this fact and the need for the UEE to be a competitive supplier in terms of price and contract terms in the post 1996 time period. As to Soviet undercutting activities in the future, it is difficult to ascertain how many SWU the Soviets will have and how low a price they would be willing to sell at.

However, a key element of our strategy is that DOE must negotiate a reduction of Soviet sales in the western world. The UEE will lose market share unless it is successful in negotiating with the Soviets. Otherwise, the UEE will have to lower prices to retain commercial customers.

Question 4. Deputy Secretary Moore notes in his testimony that our foreign competitors can employ a wide range of options in order to compete for business—our business. Will our competitor's behavior, including the Soviets, change if the Uranium Enrichment Enterprise is restructured? why or why not?

Answer. If the recommendations in our Report are implemented, options for competitor responses will be limited and any actions taken by such competitors will have a minimal impact on the assumed results. However, if the recommendations are not implemented, there is a real possibility the competitors will become even more aggressive, which would result in an even weaker enterprise.

With a restructured UEE, the ability of competitors to reduce the UEE's market share by taking advantage of the UEE's inefficiencies is significantly reduced. Competitors then must improve their economics in order to improve market share. In the short term, only a significant strengthening of the dollar relative to competitor currencies or a fundamental change in competitors' marginal costs (e.g., Eurodif renegotiates its power costs significantly) can cause such a change in competitor economics. In the longer term, it requires the deployment of more economic technology.

Therefore, the competitive responses to a restructured UEE are expected to be:

—reduced Urenco expansions, including re-evaluation of existing expansion plans;

—limited JNFI expansion; and

—more rational market behavior by the Soviets.

Question 5. What do you believe to be the greatest challenge with respect to bringing AVLIS to the marketplace?

Answer. While the planned development program to demonstrate AVLIS is reasonable, the Project Team believes that the schedule for AVLIS commercialization is ambitious, due largely to difficulties in obtaining environmental and regulatory approvals.

Among the most significant of the remaining technical uncertainties with respect to the AVLIS R&D program are the following:

—successful completion of the UDS Program;

—chemical processing (including waste management);

—site selection for the first commercial plant;

—environmental permitting;

—NRC licensing; and

—security, safeguards and non-proliferation issues.

The DOE's AVLIS deployment schedule projects the completion of a UDS enrichment demonstration by FY 1992 and initial plant deployment by FY 1997. Meeting this optimistic schedule depends primarily on resolving all the technical and regulatory issues noted above and the availability of 100 percent of the funding assumed in the planned schedule. While meeting both these conditions is highly problematic, there appears to be nothing in the development schedules per se that presents an unusual risk of failure.

The current plant deployment schedule calls for a construction start in March 1993 and initial operation in January 1997. Beginning construction in March 1993

requires that site selection and plant licensing will proceed in parallel, roughly over the period from early 1991 to early 1993. This construction start date also assumes that there will be no slippage in the UDS Program. Given these assumptions, the Project Team's AVLIS Advisory Panel concluded that the DOE's program schedule for commercial plant deployment appears highly optimistic.

Based on the technical issues noted above, the primary scheduling concern relates to the NRC licensing process. For the reasons stated below, the Panel believes that the NRC licensing schedule assumed by the DOE is optimistic. Moreover, resolution of the key uncertainties is beyond the control of the AVLIS program managers. Among the Panel's key concerns are the following:

—The precise steps required for the DOE to receive the NRC site and licensing approvals for AVLIS are not yet established. Thus, it is difficult to determine the basis for projecting a feasible schedule.

—Even if the licensing steps for an enrichment facility were clear, the licensing authority, the NRC, has never actually licensed an enrichment plant. Therefore, there is no basis for predicting the criteria that will be applied nor the extent of engineering data that will need to be submitted to satisfy such criteria. In the current political environment, it is reasonable to expect that more rather than less data will be required.

—The NRC licensing process is open to intervention. Such intervention is inevitable given the complex issues surrounding such a new technology such as AVLIS and its relationship to the nuclear power industry.

The ability of the UEE to keep AVLIS on schedule and accelerate its deployment if at all possible will directly translate to an enhanced competitive and profitable position for the UEE.

Question 6. How will the pending House and Senate clean air bills affect the competitiveness and the profitability of the Uranium Enrichment Program?

Answer. Clean air legislation, to which the UEE's foreign competitors are not subject, will have a significant effect on the UEE's production costs. Of the potential for an additional $24 per SWU in the UEE's production costs that could arise as a result of clean air legislation, approximately $4 per SWU is attributable to the more stringent requirements of the House version of this legislation that is specifically targeted to the power plants serving the GDPs. This $4 per SWU increment is not a significant increase in the UEE's production costs. However, in a market environment where it is unlikely for SWU prices to exceed $100 per SWU, and where the UEE's average cost of producing a SWU is approximately $90 per SWU, this $4 per SWU cost increase would effectively reduce the UEE's potential profit by 40 percent. Therefore, this overall increase in production costs (from approximately $70 per SWU currently to $94 per SWU in 1996) and the implications it has for the UEE's potential competitiveness and profitability give added weight to the importance of developing and deploying the much less energy-intensive AVLIS technology so as to remain in a competitive posture.

Question 7. What changes to S. 83 would you amend?

Answer. The Project Team's recommended strategy differs from S. 83 in the areas of structure and organization, policies and practices and transfer of assets and liabilities. The sections below expand on our recommended changes to S. 83 and also we provide a comparison of our strategy to S. 83.

Structure and Organization—In contrast to S. 83, the Project Team's recommended structure would establish a government corporation with as many attributes of a private entity as possible, including a management structure similar to a private corporation rather than that specified by S. 83. The Project Team's Corporation could offer compensation at a sufficient level to attract the most qualified people, since it would not be constrained by Federal pay schedules and rules applicable to Government employment. The Government's interest in establishing effective, responsible management would be adequately protected in the Project Team's structure by the three Cabinet Board members and by the appointment of the other Board members by the President.

Policies and Practices—The Project Team's recommendation differs in that it would provide the Corporation with a one time appropriation for a line of credit or revolving fund for establishing its working capital needs. In addition, the Project Team believes that the enabling legislation should provide the authority for the Corporation to raise funds, up to a stated amount, in the public capital markets supported by its revenues, to the extent possible. Should the Corporation's capital market access be limited, for whatever reason, the Corporation should also be allowed to borrow, as opposed to receive appropriations, from the Treasury. Rather than restricting the use of profits by the Corporation to "an overriding need" standard as found in S. 83, the Project Team's proposal would permit the Corporation to

balance its retention of earnings based on its business needs with its payment of dividends to the Treasury. The Corporation's profits, in excess of the retained earnings, would be deposited into a DOE account in the Treasury and would be made available through the appropriation process to the DOE for the Government's D&D costs, the TVA contract settlement payments, and all existing environmental liabilities. Similar to S. 83, the Project Team's recommended structure would include a D&D sinking fund for the Corporation's annual deposit of a predetermined fixed sum to support future D&D costs at its operating facilities. This fund, in the Project Team's view, would differ from S. 83 in that it would be for a fixed yearly amount and would be retained as an asset of the Corporation. The Project Team recommends, as in S. 83, that the UEE should be freed from the restrictive requirements of Section 161(v). Unlike S. 83, however, the Project Team believes that the Corporation's commercial pricing policy should be designed to meet market conditions and maximize returns. S. 83 would seek similar goals but would nevertheless require that commercial sales recover the initial debt and D&D liabilities thus severely constraining the flexibility of its Corporation to price to the market.

The Project Team has sought to restructure the UEE with an adequate funding base to be able to conduct continuing operations, to plan for its possible future capital needs (such as, the construction of AVLIS facilities), and to allow the Corporation to operate in a manner that is free of past unrecovered Government investments and preexisting program liabilities. This new structure would permit the Corporation to become an effective global competitor, retain or increase its current market share, maximize its profits, and, thereby, the dividends returned to the Treasury, and ultimately, its value to the Treasury, if privatized. This strategy would provide, in the Project Team's view, greater returns to the Treasury to pay for D&D costs, environmental clean-up and other preexisting liabilities of the UEE than could be achieved by the structure proposed by S. 83.

Transfer of Assets and Liabilities—The principal difference between the Project Team's recommendations and the features of S. 83 noted above relates to the treatment of past liabilities and the abandoned facilities of the UEE. The Project Team believes that the assumption of these liabilities by a newly-formed entity will increase its cost arbitrarily, cause it to lose sales and reduce its profitability, thereby lessening its value to the Treasury. In addition, all AVLIS technology and facilities are transferred to the new Corporation.

A line item comparison of the Project Team's proposed strategy to S. 83 is presented on the following pages.

COMPARISON OF PROPOSED CORPORATION WITH S. 83

Provision	Proposed Corporation	S. 83
General Structure	Capital stock wholly-owned by U.S.; corporation is an instrumentality of U.S.	Capital stock wholly-owned by U.S.; corporation is an instrumentality of the U.S.
Board of Directors	Managed by a Board of Directors. Board consists of 7 members, including Energy and Defense Secretaries, the Director of OMB and 4 Presidential appointees.	Managed by an administrator appointed by the President. A Board of Directors, appointed by the President, serves in advisory role to the Administrator.
Officers and Employees.	Non-governmental employees with no pay caps.	Governmental employees subject to pay scales. Top 10 corporate officers tied to Executive Level schedule.
Powers	Broad powers to conduct business without regard to procurement regulations.	Broad powers to conduct business without regard to certain procurement regulation.

COMPARISON OF PROPOSED CORPORATION WITH S. 83—Continued

Provision	Proposed Corporation	S. 83
Financing Activities....	Line of credit or revolving fund to provide working capital needs. Authored to issue public debt, pledged by revenues, to the extent possible; borrowing from Treasury if unable to access capital markets.	Authored to issue $2.5 billion in public debt, pledged by revenues. Not guaranteed by U.S.
Budget and Financial Controls.	Submits annual budget to President. Audited by independent accounting firm, subject to GAO review. Not subject to GCCA.	Subject to GCCA. Thus, required to submit annual budget to President and subject to GAO audit. Audited by independent accounting firm in years not audited by GAO.
Pricing.....	Commercial pricing set by Board based on best interests of corporation. Government pricing based on cost plus a reasonable return. Section 161(v) price restrictions removed.	Commercial pricing set to recover costs, including commercial share of D&D, and generate profit. Government pricing based on costs, including Government share of D&D, but excluding certain obligations to the Government. Government pricing for low assay enrichment services shall not exceed the average base price paid by commercial customers. Section 161(v) price restrictions removed.
Transfer of Assets.....	Assets of the enrichment enterprise are transferred to corporation, except for the Oak Ridge plant and GCEP facility. Also, AVLIS technology and facilities to be transferred.	Assets of the enrichment enterprise are transferred to corporation, except for the Oak Ridge plant and GCEP facility, AVLIS, certain uranium inventory and feed materials. Corporation has right to utilize AVLIS technology. Oak Ridge transferred at time of D&D.
Transfer of Liabilities.	Corporation would be responsible for its share, on a going-forward basis, of environmental compliance costs, NRC licensing and, when appropriate, D&D liabilities.	All liabilities, unless otherwise specified, remain with U.S. D&D liabilities transferred to corporation. Unclear who retains environmental liabilities. Corporation to pay U.S. $364 million with interest over 20 years.
Decontamination and Decommissioning Fund.	Corporation makes annual payments in predetermined amount into sinking fund for its allocated portion of D&D costs related to the Paducah and Portsmouth plants.	Corporation makes annual payments into sinking fund to pay D&D costs at all 3 GDP facilities. Corporation establishes funding schedule, but must be 50% funded by 2000.

COMPARISON OF PROPOSED CORPORATION WITH S. 83—Continued

Provision	Proposed Corporation	S. 83
Nuclear Hazard Liability.	Energy Secretary shall indemnify corporation and its contractors from liability; after NRC licensing, corporation and contractors treated as NRC licensee.	Corporation has authority to indemnify its contractors from liability; after NRC licensing corporation and contractors treated as NRC licensees.
NRC Licensing.....	Corporation exempt from NRC licensing with respect to existing GDP's; must apply for license one year after NRC promulgates regulations. NRC to promulgate regulations within 2 years; exemption lapses upon licensing. New enrichment facilities must be licensed.	Corporation exempt from NRC licensing with respect to existing GDP's; must apply for licenses one year after NRC promulgates regulations NRC has 2 years to promulgate; exemption lapses upon licensing. New enrichment facilities must be licensed. Energy Secretary retains oversight with respect to national security, safety and the environment.
Applicability of Environmental Laws.	Federal, state and local laws directly apply; any past or ongoing nuclear incident remains subject to CERCLA; President or EPA can grant exemptions from environmental requirements for up to one year if required by the national interest or if required technology or capacity is not reasonably available to the Corporation.	Corporation stands in shoes of the DOE until four years after enactment, then corporation is subject to Federal, State and local environmental laws to same extent as privately owned corporation unless the President determines otherwise.
Federal & State Taxes.	No Federal, State or local taxes.	No Federal, State or local taxes; payments in lieu of property taxes.
Privatization.....	Board determines when obstacles to privatization have been eliminated and reports to President at such time. Congressional action required to privatize corporation.	Final privatization study required within 5 years. Congress must pass new legislation to privatize.

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